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TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1905.

No. 175.

COMPUTING SCALE COMPANY OF AMERICA, APPELLANT,

vs.

THE AUTOMATIC SCALE COMPANY.

APPEAL FROM THE COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.

FILED DECEMBER 29, 1905.

(20,027.)

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a In the Court of Appeals of the District of Columbia.

No. 1572.

COMPUTING SCALE COMPANY OF AMERICA, Appellant,
vs.
THE AUTOMATIC SCALE COMPANY.

Supreme Court of the District of Columbia.

No. 23420. In Equity.

COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

UNITED STATES OF AMERICA, *District of Columbia, ss:*

Be it remembered, that in the supreme court of the District of Columbia, at the city of Washington, in said District, at the times hereinafter mentioned, the following papers were filed and proceedings had, in the above-entitled cause, to wit:—

1 Filed July 17, 1902.

In the Supreme Court of the District of Columbia, the — Day of July, 1902.

COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

In Equity No. 23420; Docket No. 52.

Bill of Complaint.

To the Supreme Court of the District of Columbia, holding an Equity Court:

The plaintiff states as follows:

1. That the plaintiff is a corporation duly created and existing under and by virtue of the laws of the State of New Jersey, and has its principal place of business at Chicago, in the County of Cook, in the State of Illinois, and brings this its bill of complaint in its own right.

2. That the defendant is The Automatic Scale Company, a corporation created and existing under and by virtue of the laws of the State of New Jersey, and has a regular and established place of

business in the city of Washington, in the District of Columbia.

2 3. That heretofore and before the 27th day of May, 1902, Austin B. Hayden, a resident of Chicago, in the State of Illinois, was the true, original and first inventor of certain new and useful improvements in computing scales, not known or used by others in this country before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof, or more than two years prior to his application for patent therefor, and not in public use or on sale in this country for more than two years prior to his said application for patent, and so being the true, original and first inventor thereof, the said Austin B. Hayden, made due application, according to law, for letters patent therefor, and, on the date last aforesaid, upon his said application and in conformity to law, letters patent of the United States, dated May 27, 1902, numbered 700919, duly executed and recorded, sealed with the seal of the Patent Office and signed by the Commissioner of Patents, according to law, were duly granted and delivered to the plaintiff, as the assignee of the said Austin B. Hayden (the entire right, title and interest in and to said invention and in and to the letters patent that might be granted therefor, having, prior to the issue of said letters patent, been assigned, sold and conveyed by the said Hayden to the plaintiff herein, by certain mesne assignments in writing, duly executed and delivered and duly recorded in the United States Patent Office, the said instruments of assignment requesting the issue of said letters patent to the plaintiff) whereby there was granted and secured, or intended to be granted and secured to the plaintiff, its successors and assigns, for the term of seventeen years from and after the said 27th day of May, 1902, the exclusive right to make, use and sell, throughout the United States and the Territories

3 thereof, the invention aforesaid, a description whereof, in the words of the said Austin B. Hayden, was given in the schedule annexed to said letters patent and made a part thereof, as by reference to said letters patent, or a duly authenticated copy thereof, here in court to be produced, will more fully and at large appear.

4. And the plaintiff further shows unto your Honors and avers, that it has never assigned or granted any right, title or interest whatsoever in or to the said invention nor in and to said letters patent No. 700919, but still holds and owns the entire and exclusive right, title and interest in and to the same.

5. And the plaintiff further shows unto your Honors, that it is advised by its counsel and believes and avers, that said letters patent No. 700919, are valid and effectual at law and in equity to secure to the plaintiff the exclusive rights and privilege thereby granted; that so far as the plaintiff has been informed and believes the public have generally acquiesced in the plaintiff's rights under said letters patent, and that the plaintiff is entitled to the entire and exclusive use and enjoyment of said invention and the said existing letters

patent and that but for the infringement hereinafter complained of the plaintiff would have been and would now be in the undisturbed possession, use and enjoyment of said inventions, discoveries and improvements and of said exclusive rights and privileges and in receipt of the profits of the same.

6. And the plaintiff further shows unto your Honors, that it is informed and believes and therefore avers, that the defendant, The Automatic Scale Company, well knowing the premises and
4 the rights and privileges secured to the plaintiff as aforesaid, and in order to injure and damage the plaintiff and to deprive it of the exclusive benefits and advantages which would otherwise accrue to it therefrom, has created and maintained, and now has and still maintains, a regular and established place of business at the city of Washington, in the District of Columbia, and has at such regular and established place of business and elsewhere within the said District of Columbia, and at other places within the United States, without the license or consent of the plaintiff and against its will, made, used and sold, and is now making, using and selling, apparatus containing and embodying the invention secured exclusively to the plaintiff by said letters patent No. 700919, as aforesaid, that each and every of said apparatus so made, used or sold by the said defendant, contains the invention secured to the plaintiff by said letters patent No. 700919, and is covered by the claims thereof, and as the plaintiff is advised by its counsel and believes and therefore avers, the manufacture, use or sale thereof by the said defendant was and is in violation and infringement of said letters patent; that the said infringements were and are of great injury, damage and loss of and to the plaintiff, to wit, as plaintiff believes and avers, the aggregate sum of $10,000 damages, and that as the plaintiff believes, the defendant has realized and is realizing large gains, savings and profits from its unlawful manufacture, use and sale of plaintiff's said invention, which ought to be ascertained and paid over to the plaintiff, but to what amount the plaintiff is not informed, and prays that the defendant may be required to make full disclosure thereof to this Honorable Court.

7. And the plaintiff further shows unto your Honors, that,
5 upon learning of the defendant's infringements as aforesaid, well hoping that it would cease the same, it notified and warned it to desist therefrom and to account for and pay over to the plaintiff its unlawful gains, savings and profits and to pay the damages occasioned to the plaintiff by reason of its unlawful acts aforesaid, but that the said defendant neglected and refused so to do, and continued and still continues after such notice, to make, use and vend the apparatus patented and secured to the plaintiff as aforesaid.

8. And the plaintiff further shows unto your Honors that it has good reason to believe, and does believe, and therefore avers, that the defendant in defiance of the plaintiff's exclusive rights aforesaid, intends to continue to violate and infringe plaintiff's said existing letters patent, by continuing to manufacture, use and sell, in said city of Washington, in the District of Columbia, and elsewhere in the

United States and Territories thereof, the said infringing apparatus, containing the said invention thereby secured, and that its said infringements, if not restrained by order of this Honorable Court, will work to the plaintiff's great and irreparable damage, loss and injury, and that for the reason aforesaid, the plaintiff's said exclusive rights can be adequately protected during the pendency of this suit only by means of an interlocutory injunction or injunctions to be issued out of this Honorable Court, directed to the said defendant, commanding it to desist from such infringements until the further order of the Court in the premises.

9. All which actings and doings are contrary to equity and good conscience and tend to the manifest wrong and injury of the plaintiff in the premises, in consideration whereof, and for as much as the plaintiff is remediless at common law, and have adequate
6 relief only in this Honorable Court, where matters of this sort are properly cognizable and relievable, to the end, therefore, that the said defendant may, if it can, show why the plaintiff should not have the relief hereby prayed, and may, according to the best and utmost of the knowledge, remembrance, information and belief of its proper officer or officers, but not upon oath—an answer under oath being hereby expressly waived—full, true, direct and perfect answer make to all and singular the premises, and that the said defendant may come to a fair and just account of the gains, profits and savings unlawfully realized by it, as aforesaid, and may be compelled by a decree of this Honorable Court to pay said gains, savings and profits to the plaintiff, to pay all damages aforesaid to the plaintiff, to pay the costs of this suit, and to desist from further infringing the plaintiff's rights in the premises.

May it please your Honors, the premises considered, to grant to the plaintiff, upon motion hereafter to be made for that purpose, an interlocutory writ or writs of injunction issued by this Court, or by one of your Honors, according to law, restraining the said defendant, the said The Automatic Scale Company, its officers, clerks, attorneys, agents, servants and workmen, till the further order or decree of this Honorable Court in the premises, from directly or indirectly making, using or selling, the apparatus or apparatuses hereinbefore alleged to be infringements; and also the writ or writs of injunction issued by this Court, according to law, perpetually restraining and enjoining the said defendant, the said The Automatic Scale Company, its officers, clerks, attorneys, agents, servants and workmen from directly or indirectly making, using or selling any apparatus con-
7 taining or embodying the invention claimed in the plaintiff's aforesaid letters patent; and that the plaintiff may have such other and further relief in the premises as the nature of the case may require and to your Honors may seem meet.

And may it please your Honors to grant unto the plaintiff the writ or writs of *subpœna ad respondendum* of the United States of America, issuing out of and under the seal of this Honorable Court, directed to the said defendant, the said The Automatic Scale Company, and commanding it on a day certain and under a certain penalty therein to be mentioned to be and appear in this Honorable

Court to make answer to this bill of complaint, and then and there to stand to, perform and abide such further order, direction and decree as may be made against it.

And the plaintiff, as in duty bound, will ever pray, etc.

COMPUTING SCALE COMPANY OF AMERICA,
By EDWARD CANBY, *President.*

[Corporate Seal.]

CHURCH & CHURCH,
Solicitors and of Counsel for Plaintiff.

8 UNITED STATES OF AMERICA,
State of ——, *County of* ——.

Edward Canby being duly sworn, deposes and says that he is President of the Computing Scale Company of America, the plaintiff herein above named, that he has read the foregoing bill of complaint by him subscribed and knows the contents thereof, and that the same is true of his own knowledge, except as to the matters therein stated to be on information and belief, and as to those matters he verily believes it to be true.

EDWARD CANBY.

Sworn to and subscribed before me this 14th day of July, 1902.
H. M. WALSH,
Notary Public, Montgomery County, Ohio.

9 Filed October 3, 1902.

In the Supreme Court of the District of Columbia.

COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

In Equity No. 23420.

Answer.

The answer of the Automatic Scale Company, Defendant to the bill of complaint of the Computing Scale Company of America, Complainant.

This defendant, now and at all times hereafter, saving and reserving to itself all benefit and advantage of exception which can or may be had or taken to the many errors, uncertainties and other imperfections in the said bill of complaint contained, for answer thereto or to so much and such parts thereof as it is advised is material or necessary to be answered unto, answering says:

1. This defendant does not know and has not been informed, save by said bill of complaint, whether the complainant, The Com-

puting Scale Company of America, is a corporation created and existing under and by virtue of the laws of the State of New Jersey, or a citizen or corporation of said State, nor whether the said complainant has any legal corporate status whatsoever, and therefore, this defendant leaves the complainant to make, if it can, such proof thereof as it may be advised is material.

10 2. Answering upon information and belief, this defendant admits that letters patent dated May 27, 1902, No. 700919, were issued from the Patent Office of the United States to The Computing Scale Company of America as the assignee of Austin B. Hayden; but as to whether or not the said Austin B. Hayden made the application therefor according to law, or whether the said letters patent were duly executed, recorded, signed or counter-signed according to law, or were duly granted, issued and delivered, or whether or not previously to the issue of said letters patent the said Austin B. Hayden, assigned and transferred to the said Computing Scale Company of America, the entire right, title and interest in and to the said alleged invention, this defendant has no knowledge save from the bill of complaint, and leaves the complainant to make such proof thereto as it may be advised is material or necessary.

3. Further answering, upon information and belief, this defendant denies that Austin B. Hayden was the true, original or first inventor of the alleged improvements in automatic computing scales set forth in said letters patent No. 700919 or of any material or substantial part thereof; denies that before the said Austin B. Hayden's alleged invention or discovery thereof, the same were not known or used in this country, or were not patented or described in any printed publication in this or any foreign country; denies that the same had not, at the time of Hayden's application for said letters patent, been in public use or on sale for more than two years; and denies that by the issue of said letters patent there was granted and secured to the said Computing Scale Company of America, the alleged or any exclusive rights.

4. This defendant further answering, upon information and belief denies that the said invention or discovery claimed in said letters patent 700919 was or is of great or any utility and value; denies that the said letters patent 700919 are valid and effectual at law and in equity to secure to the plaintiff the exclusive or any rights

11 and privileges; denies that the public have generally acquiesced in the alleged rights of the plaintiff; denies that the plaintiff is entitled to the entire and exclusive use and enjoyment of said invention and the said existing letters patent and denies that but for the alleged infringement of the defendant the plaintiff would have been and would now be in the undisturbed possession of said alleged invention discoveries and improvements, and of said alleged exclusive rights and privileges and in receipt of any profits of the same.

5. This defendant further answering, as it is advised and believes, denies that in the city of Washington, or in the District of Columbia or within this Judicial District, or elsewhere within the United States

it has at any time made, used or sold, or is now making, using or selling apparatus containing and embodying the alleged invention and improvement alleged to be secured to the plaintiff by the said letters patent No. 700919; denies that each and every or any of the apparatus made, used or sold by this defendant contains the alleged invention alleged to have been secured to said complainant by said letters patent and covered by the claims thereof, or any invention used, secured and covered; denies, on advice and belief that the manufacture, use or sale by this defendant of any apparatus was or is in violation or infringement of said letters patent, or that it has in any manner infringed said letters patent; denies that by the alleged or any acts of this defendant, the said complainant has suffered great or any injury, damage or loss, and particularly denies that said complainant has suffered injury, damage or loss in the aggregate sum of $10,000—damages, and denies that this defendant has realized or is realizing large or any gain, savings or profits from the unlawful manufacture, use or sale of said complainant's said alleged inventions or any of them, and denies that after notification, as alleged in said bill of complaint, it has continued, and still continues to make, use or vend any apparatus patented and secured to said complainant as aforesaid, and denies that it intends to con-
12 tinue to violate or infringe complainant's said letters patent by continuing to manufacture, use or sell infringing apparatus.

6. This defendant further answering upon information and belief, says that the alleged invention purporting to be patented by said letters patent No. 700919 or things in all substantial and material respects the same, and every material and substantial part thereof had, prior to the alleged or any invention or discovery thereof by the said Austin B. Hayden, been patented in and by letters patent of the United States, as follows; wherefore, defendant submits, said letters patent No. 700919, are invalid and void:

E. P. Beckwith, 12249, Jan. 16, 1855.
S. R. P. Camp, 103977, June 7, 1870.
W. H. Phinney, 106869, Aug. 30, 1870.
C. Pfanne, 216450, June 10, 1879.
A. Turnbull, 378382, Feb. 21, 1888.
C. M. Babcock, 421805, Feb. 18, 1890.
Beckett & Roberts, 527828, Oct. 23, 1894.
J. H. Freeman, Jr., 431456, July 1, 1890.
J. H. Swihart, 539599, May 21, 1895.
A. U. Smith, 545616, Sept. 3, 1895.
H. E. Swift, 579550, Mar. 23, 1897.
J. E. Duncan, 597607, Jan. 18, 1898.

7. This defendant further answering, upon information and belief, says that the alleged invention, purporting to be patented by said letters patent No. 700919, or things in all material and substantial respects the same, and every material and substantial part thereof had, prior to the alleged or any invention or discovery thereof by the said Austin B. Hayden, been invented and discovered by one

Calvin F. Christopher of Washington, D. C.; and that prior to the alleged or any invention or discovery of the alleged patented improvements the said Calvin F. Christopher had made and constructed, and practically and successfully used in the said city of Washington, D. C., and in Spartanburg, S. C., several scales
13 containing and embodying each and all of said alleged inventions or improvements, or things in all material and substantial respects the same; wherefore defendant submits said letters patent 700919 are invalid and void.

8. This defendant further answering upon information, advice and belief, avers that the alleged invention and improvement described and claimed as new in the said letters patent in said bill of complaint mentioned, does not, and did not at the time of the alleged or any invention or discovery thereof by the said Austin B. Hayden, constitute any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement thereof within the meaning and intent in the Statutes of the United States relating to the grant of patents for inventions, and defendant further says that the said alleged invention, did not, in view of the prior art, involve or constitute any patentable novelty or invention; wherefore, defendant submits, said letters patent are invalid and void.

9. This defendant further answering upon information and belief, says that the said letters patent in said bill of complaint mentioned are invalid and void, because the several alleged combinations therein set forth and attempted to be claimed are not patentable combinations, but mere unpatentable aggregations of old and well known parts, having in the alleged combinations in said letters patent set forth no co-operative relation and having no new function or result.

10. This defendant, for the reasons hereinabove recited, submits that the said complainant is not entitled to any further answer or discovery from it, nor to any account, nor to any payment by this defendant of profits or damages, nor to any injunction against this defendant, as prayed for in the bill of complaint; but without admitting that any other matter contained in the said bill of complaint material to be answered unto, and not herein already sufficiently answered, is true to its knowledge or belief, this de-
14 fendant submits that said complainant is not entitled to any relief against this defendant, all of which this defendant is ready to aver, maintain and prove as this Honorable Court shall direct, and prays to be hence dismissed with its reasonable costs and charges in this behalf most wrongfully sustained.

AUTOMATIC SCALE CO.,
M. L. WELFLEY, *President.*

E. HILTON JACKSON,
Solicitor for Defendant.

In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

Replication.

This repliant, saving and reserving unto itself all and all manner of advantage of exception, which may be had or taken to the manifold errors, uncertainties, and insufficiencies of the answer of the said defendant, for replication thereunto, says that it does and will aver, maintain, and prove its said bill to be true, certain, and sufficient in the law to be answered unto by the said defendant, and that the answer of the said defendant is uncertain, evasive, and insufficient in law, to be replied unto by this repliant, without this, that any other matter or thing whatsoever in the said answer contained, material or effectual in the law to be replied unto, and not herein and hereby well and sufficiently replied unto, confessed or avoided, traversed or denied, is true, all which matters and things this repliant is ready to aver, maintain and prove as this Honorable Court shall direct, and humbly prays as in and by its said bill it hath already prayed.

CHURCH & CHURCH,
Solicitors for Complainant.

Filed Oct. 16, 1902.

15 & 16 *Stipulation.*

It is hereby stipulated and agreed by and between the parties hereto and their respective solicitors and counsel that the testimony of witnesses to be adduced in this cause may be taken orally under the 67 rule in equity, before any notary public or other competent officer authorized to take depositions under sections 863-4-5 of the Revised Statutes of the United States, upon reasonable notice, and that such officer shall have all the powers and duties of a standing examiner of this court, and further that the testimony so adduced may be reduced to writing or typewriting, either by the officer before whom it is taken, or by a skillful penman or typewritist, under the direction and supervision of said officer.

It is further stipulated and agreed that uncertified copies of the specifications and drawings of United States patents, printed by the Government, may be introduced in evidence with the same force and effect as the originals of said patents or certified copies thereof.

It is further stipulated and agreed that each party shall furnish, gratis, to the other party a copy of each deposition taken in their or its behalf.

It is further stipulated and agreed that the original depositions and the exhibits introduced in connection with the same may be delivered into the custody of the counsel for the party taking such depositions, to be by said counsel returned to the court before the day of hearing, subject to the examination and any proper use of said testimony and exhibits by counsel for the other side, upon reasonable notice.

CHURCH & CHURCH,
Sol'rs for Plaintiff.

E. HILTON JACKSON,
Sol'c'r for Defendant.

Nov. 26, 1902.

17 Filed May 2, 1904.

In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

WASHINGTON, D. C., *Nov.* 25, 1902.

Depositions of witnesses taken in behalf of the plaintiff, in the above entitled cause, at the office of Church & Church, 63 McGill Building, Washington, D. C., on Tuesday, the 25th day of November, 1902, before Charles A. Neale, Esq., a notary public in and for the District of Columbia, acting as Special Examiner, by consent.

Present: Melville Church in behalf of plaintiff; E. Hilton Jackson and James M. Spear, in behalf of defendant.

Deposition of Arthur S. Browne.

ARTHUR S. BROWNE, being duly sworn, deposes and says in answer to interrogatories proposed to him by Mr. Church, of counsel for the plaintiff, as follows:

Q. 1. Please state your name, age, residence and occupation.

A. Arthur S. Browne; 41; Washington, D. C.; patent solicitor and expert.

18 Q. 2. What advantages, experience and training have you had to, in your judgment, qualify you to, testify as an expert in patent cases?

A. I was graduated from Dartmouth College, Hanover, N. H., in 1881, and in the following year I entered my present profession in which I have since been actively and continuously engaged. I have prepared and prosecuted many hundreds of applications for patents and have made numerous investigations into the literature

of various arts for the purpose of giving opinions concerning the novelty of inventions, and the scope, validity and infringement of patents. I have frequently visited work shops and factories for the purpose of practically familiarizing myself with the construction and mode of operation of various machines and with the practice of various arts. I have frequently testified as an expert witness in patent suits in the United States Courts having testified in more than one hundred such suits.

(Plaintiff offers in evidence a copy of letters patent of the United States No. 700919, granted to Computing Scale Company of America, assignee of Austin B. Hayden, May 27, 1902, for computing scale, and requests that the same be marked Plaintiff's Exhibit Plaintiff Patent.)

Q. 3. Have you read and do you understand Plaintiff's Exhibit Plaintiff's Patent just offered in evidence?
A. Yes.

(Plaintiff offers in evidence a computing scale which it is agreed is a scale of defendant's manufacture made before the filing of the bill in this cause and after the grant of the patent in suit, and the same is marked Plaintiff's Exhibit Defendant's Scale.)

Q. 4. State what you find to be the mechanical construction
19 shown and described in Plaintiff's Exhibit Plaintiff's Patent and particularly referred to in claims 1, 2, 6, 7 and 8, thereof and then please compare the same with Plaintiff's Exhibit Defendant's Scale pointing out any similarities or differences that you may find as the result of such comparison and giving your reasons for any opinions you may express?
A. Complainant's patent is for a computing or price scale, the object of which is to enable the price of an article weighed thereon to be at once read upon the scale, thus avoiding the necessity of mathematical calculation on the part of the dealer.
The specification of the complainant's patent says:
"My invention relates particularly to an improvement in computing scales of the spring balance type, my object being especially to increase the computing capacity of the scales of this type." (Page 1, lines 8 to 12.)
The general appearance of the scale is illustrated in figure 1 of the drawings, and the details of the construction are illustrated in the other figures.
The two principal parts of the mechanism are as follows: 1st, a vertically arranged, non-rotating frame which comprises and includes a vertical cylindrical casing which encloses, conceals and protects the major portion of the operating portions of the scale, and upon which are marked the price indications which indicate the price per pound at which the articles weighed are to be sold. As clearly shown in the drawings, this external casing or frame is provided with a vertically disposed sight opening through which the coacting mechanism is observable, and along one vertical edge of this sight opening are arranged the numerals indicating the price per pound,

these numerals in the illustrated instance running consecutively from 2 to 30.

20 The second of these principal parts is a second cylinder located within the casing, this cylinder constituting a computing cylinder or chart drum upon which are placed indications indicating the weight in pounds of the article weighed, and also having other indications indicating the price of an article weighed corresponding to the weight and to the price per pound. This chart drum or computing cylinder extends vertically within the external casing and it is arranged to rotate on a vertical axis within the external casing. This casing is appropriately connected to the spring balancing mechanism and to the scale pan so that when the spring balancing mechanism moves up and down on the placing or removing of a load on the scale pan, the chart drum will be rotated in one direction or the other within the external casing or frame. This mechanism I will hereafter refer to, after calling further attention to the arrangement of the weight indicating and value indicating figures on the chart drum.

As shown in figure 2 of the drawings the weight and value indicating figures are placed in horizontal rows on the external surface or periphery of the rotatable chart drum of the computing cylinder, the weight indications being shown in a horizontal row at the bottom, and the price indications in horizontal rows above, there being as many of these horizontal rows of price indicating figures as there are "price per pound" indicating figures on the fixed external casing. These value indicating figures on the chart drum are computed at different rates corresponding to the "price per pound" figures on the external casing. As indicated in figure 2 of the drawings of the patent, there is supposed to be a weight on the scale pan of five pounds, this weight being indicated on the weight scale, and

21 it will be seen that in such instance the various value indications on the chart drum opposite the "price per pound" indications on the fixed casing, are in each illustrated instance, five times as great as the corresponding "price per pound" indications. The drawings illustrate only a portion of the indicating figures on the chart drum, but it will be understood in practice that this drum will be entirely covered on its external surface with figures corresponding to the weights multiplied by the figures indicating "price per pound" on the non-rotatable external casing. Accordingly whenever the interior chart drum is turned a distance corresponding to the load placed on the scale pan, the value of the load can be read at once opposite the figures on the external casing which correspond to the price per pound of the article weighed.

The various price indications on the chart drum are visible through the sight opening in the external casing.

The mechanism whereby the chart drum is rotated a distance corresponding to the weight of the load placed on the scale pan is as follows. The balancing mechanism is a spring balance comprising two springs clearly shown in Figure 3 of the drawing, which are suspended from a suitable portion of the non-rotating frame of the scale. To the lower ends of these springs is attached a cross bar

in the middle of which depends a rod indicated by the letter E this cross bar and rod constituting the runner of the scale. The scale pan is suspended from the lower end of this rod as illustrated in Figure 1. When a load is placed on the scale pan the vertical runner moves vertically downward distending the spring to an extent proportional to the weight of the load. In order to indicate the weight this vertical movement of the spring supported runner is converted or translated into a rotary movement of the chart
22 drum by suitable intervening mechanism. In the specific embodiment of the invention as illustrated in the drawings this intervening mechanism consists of a spiral groove of high pitch on the vertical rod E and two rollers journaled in suitable bearings carried by the rotatable chart drum, the bearing of one of these rollers being spring pressed so that the rollers are held in yielding contract with the spiral groove on the rod. Consequently as the rod moves vertically the spiral groove thereof causes the chart drum or computing cylinder to rotate on its vertical axis. Accordingly, the mechanism is such that the vertical movement of the runner is translated into rotary movement of the chart drum and the chart drum is rotated to an extent proportional to the vertical movement of the runner.

Defendants scale is in all substantial respects the same as the scale of the complainant's patent, especially as far as the subject matter of claims 1, 2, 6, 7 and 8 of the patent are concerned, and it embodies and contains the subject matter of each of said claims.

The defendant's scale comprises two principal parts, a non-rotating frame which in its construction provides an external cylindrical casing, and an interior computing cylinder or chart drum arranged to rotate within the external casing. In the defendant's scale as in that of the patent, the non-rotating frame including the external casing is provided with means for supporting it from above so that the scale as a whole may be suspended from a suitable standard. The external casing and chart drum of defendant's scale are both vertically disposed cylinders, and the chart drum is journaled within the external casing so as to rotate on a vertical axis.

The external non-rotatable casing of defendant's scale has
23 suitable sight openings on one side which provide means through which the indications on the chart drum may be read. Along one vertical edge of the sight openings are arranged in a vertical row figures which indicate the value of a unit of weight, these figures being appropriate to indicate "price per pound" in cents, these figures running from four to forty (4 to 40).

The rotating computing cylinder or chart drum is provided on its external surface with horizontal rows of figures, one of which rows (at the middle) indicate weight in pounds and ounces, while the remainder of the horizontal rows are value indicating figures computed at different rates corresponding to the weight and to the "price per pound," there being as many of these horizontal value indicating rows as there are numbers on the fixed scale of the stationary external casing indicating price per pound. These value computa-

tions are so computed and placed that when a load is placed upon the scale pan the value of the load can be at once read opposite the figures indicating the price per pound. For example, if a load weighing 7 pounds is placed on the scale pan, and the article is worth 12 cents per pound the number "84" will appear through the sight opening opposite the number 12 on the fixed scale of the external casing.

I might say at this point that in defendant's scale there are two horizontal rows of value indicating figures opposite each "price per pound" indication on the fixed scale, thus enabling a larger number of computations to be placed upon the drum. Defendant's scale is provided with a scale pan which is spring supported so as to move down to an extent determined by the weight of a load placed thereon, the scale pan being suspended from a suitable runner. This
24 runner moves vertically up and down and it is operatively connected by suitable intervening mechanism with the chart drum so that the chart drum rotates to an extent corresponding to the vertical movements of the runner and scale pan.

Defendant's scale includes as part of its stationary frame a suitable support within the casing and within the chart drum from which are suspended two weighing springs and from the lower ends of these weighing springs are suspended the runner to which in turn the scale pan is suspended. The runner comprises a horizontal bar connected by vertical rods to the lower end of the respective springs and from the middle of this horizontal cross bar is suspended a short vertical rod hooked at its lower end to receive the bail of the scale pan. This runner has secured to it an upwardly extending toothed rack bar which rises and falls with the runner, and this rack bar engages with a pinion which turns on a short horizontal shaft in suitable fixed bearings and on the hub of this pinion is a bevel gear which engages a bevel gear on the vertical shaft of the chart drum. This mechanism can be readily seen when the cover of the external casing is removed and its operation can be readily understood by applying pressure to the scale pan.

On account of this intervening mechanism the vertical movements of the runner from which the runner or scale pan is suspended are converted or translated into rotary movements of the chart drum.

Claims 6, 7 and 8 of complainant's patent, are as follows:

"6. In a spring balance, the combination of a non-rotating frame providing an external casing and having means for supporting it from above weighing-springs secured at their upper ends to
25 rigid parts of said frame, a vertically-movable runner which is suspended from the lower ends of said springs and is provided with depending means to support the load, a chart-drum rotatably mounted within said casing on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said casing having a sight-opening through which portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer face of said frame adjacent to the value-indicating rows on the chart-drum, and mechanism for

translating the vertical movements of the runner into the rotary movements of the chart-drum.

"7. In a spring balance, the combination of an external non-rotating frame adapted to be supported from above, weighing-springs secured at their upper ends to rigid parts of said frame, a vertically-movable runner which is suspended from the lower ends of said springs and is provided at its lower end with means to support the load beneath it, a chart-drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said external frame being apertured whereby portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer face of said frame adjacent to the value-indicating rows on the chart-drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart-drum, substantially as described.

"8. In a spring-balance, the combination of an external non-rotating frame, weighing-springs supported from said frame a vertically-movable runner which is suspended from said springs and
is provided at its lower end with means to support the load
26 beneath it, a chart-drum rotatably mounted within said frame
on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said external frame being provided with a vertical aperture, whereby portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer surface of said frame adjacent to said aperture and corresponding with said value-indicating rows on the chart-drum, and mechanism for translating the vertical movements of the runner into the rotary movement of the chart-drum."

It seems to me that no comment on my part is necessary to show that the subject-matter of these three claims is embodied in the defendant's scale. In fact, the language of these claims applies literally and aptly to the defendant's scale and describes the defendant's scale just as well as the scale of complainant's patent.

Accordingly, I am of the opinion that defendant's scale contains and embodies the subject matter of each of these three claims.

Claim 1 of complainant's patent, is as follows:

"1. In a spring-balance computing scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load bearing and cylinder-revolving rod suspended from said casing, and connecting means between rod and computing-cylinder, whereby by longitudinal movement of the rod rotary movement is imparted to said cylinder, substantially as and for the purpose set forth."

The language of this claim seems to be so intelligible and
27 its applicability to defendant's scale so manifest that a de-
tailed analysis and extended comment on my part appear superfluous. I think it sufficient to say that the claim calls for "a spring supported load-bearing and cylinder revolving rod suspended from said casing, and connecting means between rod and com-

puting cylinder, whereby by longitudinal movement of the rod movement is imparted to said cylinder." It will be noted that this language is broad in its scope and does not call for any specified connecting means between the rod and the computing cylinder. Defendant's scale clearly has the mechanism here recited. It has a short rod from which the scale pan is suspended and which is itself suspended from the fixed casing by balancing springs and this rod is operatively connected with the rack which constitutes a portion of the connecting means between the rod and the computing cylinder or chart drum whereby the vertical movement of the rod (as when a load is placed on the scale pan) imparts rotary movement to the computing cylinder or chart drum.

I am therefore of the opinion that defendant's scale embodies and contains the subject matter of claim 1, since it has substantially the same mechanism called for operating in substantially the same way and producing the same result.

Claim 2 of the complainant's patent, is as follows:

"2. In a spring-balance computing scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod non-rotatably suspended from said casing, and connecting means between said rod and
28 computing-cylinder, whereby longitudinal movement of the rod produces rotary movement of the cylinder, substantially as and for the purpose set forth."

This claim differs from claim 1 only in that it additionally requires that the spring-supported load-bearing and cylinder revolving rod should be "non-rotatably" suspended from the casing, and as this additional limitation is likewise true of the rod of defendant's scale, what I have said as to the substantial embodiment of the subject-matter of claim 1 in defendant's scale applies equally to claim 2. Also I might call attention to the immaterial verbal difference between claims 1 and 2 in that claim 1 states that by the movement of the rod rotary movement "is imparted" to the computing cylinder, whereas claim 2 says that movement of the rod "produces" rotary movement of the cylinder.

I therefore am of the opinion that defendant's scale embodies and contains the subject-matter of claim 2 of complainant's patent in addition to embodying and containing the subject-matter of claims 1 6, 7, and 8, of said patent.

Cross-examination waived.

ARTHUR S. BROWNE.

29 In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

THE COMPUTING SCALE CO. OF AMERICA, Complainant,
vs.
THE AUTOMATIC SCALE CO., Defendant.

CRUSO, N. C., *Dec.* 31, 1902.

Depositions of Witnesses taken in behalf of the defendant in the above entitled cause, at Cruso, N. C., residence of Calvin F. Christopher, on Wednesday, the 31st day of December, 1902, before I. B. Pless, a Justice of the Peace in and for Haywood County, North Carolina, acting as special examiner by consent.

Present—Alexander S. Steuart in behalf of Plaintiff, and James W. Bevans in behalf of Defendant.

Met pursuant to notice and on account of indisposition of witness adjourned until Thursday, January 1, 1903.

JANUARY 1, 1903.

Met pursuant to adjournment and by consent of counsel.

Present—Same as before.

CALVIN F. CHRISTOPHER.

CALVIN F. CHRISTOPHER, being duly sworn, deposes and says in answer to interrogatories proposed to him by Mr. Bevans, representing F. Hilton Jackson, counsel for defendant, as follows:

Q. 1. State you name, age, residence and occupation.

Ans. Calvin F. Christopher is my name, my present occupation is saw-milling and farming, my age is 44 years, and residence is Cruso, Haywood County, N. C.

Q. 2. Have you any knowledge of the art of price-scales?

Ans. Yes, sir, I have; I have experimented with price-scales for twelve years, I should say. I found that they could
30 be made in different ways and shapes. I made one horizontal scale with an outer casing and an inner cylinder which contained figures and would register the full amount of articles or prices at the slot on the outer casing, with the price indicator being fixed on the outer casing, by the weight of the article moving downward on a pan fixed to a pan-beam, the scale being a spring-scale.

Q. 3. Is it to be understood from your answer to question 2, that you invented a price-scale in which you provided a horizontally-disposed outer casing carrying an indicator or index with a revoluble inner cylinder carrying the computed values, the inner cylinder being revolved by the weight of the article on the pan?

Ans. Yes, sir.

Q. 4. Can you state the date of this invention?

Ans. It was patented Aug. 19, 1897. Well I will say I invented it in the year 1895, as I had it several years before I patented it, as I did not have the money. The number of the patent was 588,128.

Q. 5. What did you do further in the price-scales line?

Ans. Well, then, I found out that I could make them either to swing vertical or to work horizontal with the same casing.

Q. 6. What do you mean by the expression "same casing"?

Ans. I mean the outer casing with the inner casing revolving inside of the outer casing, the latter carrying the prices per pound and the former the values.

Q. 7. Please state the date, as near as possible, when you "found out" that the outer fixed casing and inner rotatable casing could be arranged vertically?

Ans. I never discovered that until January, 1897, I made one and swung it up in my store-house window at Spartanburg, S. C. I used it for several months there, the revolving cylinder on the inside of the outer casing was made of paste-board and the values placed upon it, and the prices of articles was placed in line on the outer casing to register with the lines on the inner cylinder.

Q. 8. State by what means you are enabled to fix the date
31 you have given, 1897, as the date of construction of this scale containing the vertically-disposed rotatable inner cylinder?

Ans. Because I lived in Spartanburg at that date and was in business there, and I have the dates.

Q. 9. Have you any part of this scale constructed in 1897, referred to in your answer to question 7?

Ans. I have certain parts here of the scale. This is the spindle that rotated the revolving drum, and this is the frame of the gears that swung, and was fastened to the outer casing at the bottom, and the inner cylinder and outer casing has been misplaced or destroyed in moving.

Counsel for defendant at this point offered in evidence the spindle and frame referred to, the same being designated as Ex. 1 and 2, respectively.

Q. 10. In what manner was the inner vertically disposed cylinder rotated by the spindle (Ex. 1)?

Ans. By a line of cogs working in a pinion.

Q. 11. State the manner in which the cogs and pinions were arranged and by what parts carried?

Ans. The line of cogs working on a pivot in the frame and coming in mesh with a pinion on the rotating spindle which rotates the inner cylinder, the cylinder being fastened at the top of the spindle.

Q. 12. I will ask you to apply the reference numbers to the parts which you have just described, as follows: spindle-pinion 1; cogs 3.

—. ——.

Q. 13. Describe how the inner cylinder was rotated?

Ans. It was rotated by the weight of the article on the pan of

the scale pulling downwards, on an arm 4 fastened to the arm 5 that carries the line of cogs.

Q. 14. Was the scale exhibited at any other place besides Spartanburg?

Ans. No, sir.

Q. 15. Did you explain this particular construction to any one at any place other than Spartanburg?

Ans. Yes, I did at Washington to Mr. Durham, who is a model maker, at 711 G St. N. W.

Q. 16. State the names of any persons that you showed
32 the scale to, that is the scale made in 1897 having the vertically disposed fixed outer casing and the revoluble inner cylinder?

Ans. D. N. Curtiss-Dunsmare, Buncombe Co., N. C., C. K. Christopher, Cruso, Haywood Co., N. C., January, 1897 was the date.

Q. 17. Have you any other part of a scale or scales constructed with the rotatable inner cylinder?

Ans. Yes, sir; in place of the spindle, I have an aug*u*r-bit which set in a pivot-hole at the bottom of it and in a socket or bearing at the top of the outer casing, with a block to fit the twists of the bit and working on the twists, by the weights of the article coming downwards pulling on the springs, the block being attached to the beam which the springs was attached to, causing the rotation of the inner cylinder fastened to the shank of the bit.

Counsel for defendant at this point offers in evidence the aug*u*r-bits referred to, the same being designated as Exhibits 3 and 4.

Q. 18. These "aug*u*r-bits" Exhibits 3 and 4 were used in place of what part in Exhibits 1 and 2?

Ans. They were used in place of the cogs and pinion wheel.

Q. 19. Did you use these "bits" in a scale, and if so, at what date?

Ans. I could not use them; they would not work; there was too much friction.

Q. 20. State to what extent you endeavored to use them and give the date of these experiments?

Ans. In 1897, I don't know what month, I made them just like the exhibit and found they would not work and I stopped.

Q. 21. Was this before or after you exhibited the scale at Spartanburg?

Ans. It was after.

Q. 22. What did you do next if anything in the line of price-scales?

33 Ans. The next I made was the rotating pointer which was fastened to the rotating spindle that the rotating cylinder was fastened to in the January 1897 scale. I cut the revolving cylinder away and left the pointer and placed the values on the casing behind the indicator or pointer which the indicator revolved around.

Q. 23. Was this structure patented?

Ans. That was patented May 1, 1900, No. 648,609 and September 25, 1900, 658,732.

Q. 24. Why did you change from the vertically disposed revolving inner cylinder to the structure shown in the patent?

Ans. Because I thought the pointer would be lighted to revolve and I made that in the place of the cylinder.

Q. 25. You stated in your answer to question 22 that you cut the revolving cylinder all away but sufficient to form a pointer? What do you mean by this statement?

Ans. Doing away with the outer casing and projecting the pointer out over a stationary drum which contained the values of the articles and the pointer revolving around the drum carrying the prices.

Q. 26. Are you familiar with spring-balance price-scale manufactured by the Automatic Scale Co., defendant in this suit?

Ans. Yes, sir.

Q. 27. Is there any similarity between that scale and the one invented by you in 1897 and exhibited at Spartanburg?

Ans. There is a little difference in the gearing that rotated the cylinder. They both had outer casings and rotating cylinders carrying the values, the cylinders being arranged vertically and rotated by the downward pull of the article on the scale-pan.

Q. 28. Referring to your answer to question 15 at what date did you explain the 1897 scale to Mr. Durham?

Ans. September, 1899.

Q. 29. Did you explain it to anyone else, if so give the date.

Ans. To M. L. Walfley and W. F. Hummer, of Washington, D. C., in September, 1899.

34 Q. 30. Has it always been your intention to protect this invention that is the scale made in 1897 with inner vertically-disposed rotating cylinder?

Ans. Yes, sir, I was aiming to have it patented by and by.

Q. 31. What was the size of the scale you made in 1897 and exhibited at Spartanburg, that is was it a full-sized scale?

Ans. It was a model; weighed about twelve pounds. It was not a full-sized scale.

Q. 32. Was this model a practical, operative scale?

Ans. Yes, sir, I did weighing on it.

Q. 33. Was it possible to ascertain the values of articles at various prices per pound on this scale up to the capacity of the scale which you state was twelve pounds?

Ans. Yes, sir.

Q. 34. Was the scale in actual use?

Ans. Yes at my place, no where else but there.

Q. 35. For how long?

Ans. I kept it there for three or four months in my window. It was exposed where everybody could see it that wanted to see it.

Q. 36. What do you mean by the statement that the scale was not a full-sized scale?

Ans. It was nothing more than a model made to demonstrate whether or not in would be practical.

Q. 37. Did it demonstrate this to your satisfaction?

Ans. It demonstrated this to my satisfaction to know whether it was practical or not.

Q. 38. What do you consider, in a price-scale, to be the difference between a model and an actual scale?

Ans. In the actual building of scales you want to strengthen all the weak parts of a model.

Q. 39. Did you ever construct and use the scale down in patent 588,128.

Ans. Yes, sir, I had it in actual use here at Cruso in 1901.

Q. 40. In the scale made in 1897 and used in Spartanburg when an article was placed on the pan, what was the result?

Ans. When I put an article on there weighing, say five pounds, at five cents a pound the inner cylinder would revolve and
35 bring the price of 25 cents opposite the price of five cents per pound on the outer casing, and the pounds would register on the revolving cylinder at the top, showing the weight.

Cross-examination of Christopher by Mr. STEUART:

X Q. 41. What was your occupation in Spartanburg?

Ans. I was in bicycle business, bicycle repairs, and rents.

X Q. 42. When did you move away from Spartanburg?

Ans. In 1898, I believe April.

X Q. 43. You have referred to a scale which you made with a horizontal arrangement of casing. Was the cylinder in this horizontally arranged casing the same, except the figures as the cylinder in the vertically arranged casing of the 1897 scale?

Ans. A slight difference in the way the slot was made and the teeth indicated the prices.

X Q. 44. How were the figures indicating the price marked on the cylinder of the 1897 scale?

Ans. They were stamped with rubber stencils by hand.

X Q. 45. Were the graduations also laid off by hand and by you?

Ans. Yes, sir; me and my men that worked with me.

X Q. 46. I notice on this Exhibit No. 1 (spindle) screw-threads at the ends. What were they for.

Ans. That spindle has been changed from its original form on its ends and the pinion driven up on it. I have taken that spindle and changed it for another model I was making. The threads were to hold cogwheels. I did this a short time ago.

X Q. 47. Is exhibit No. 2 in the same condition in which it was when you had it in the 1897 scale?

Ans. No, sir; the bottom lugs were cut off to place in another scale, and the springs and their frame were taken out to put in another scale.

X Q. 48. Were these parts put in a scale such as in either of your patents numbered 648,609 or 658,732?

Ans. No, sir; not exactly that—been changed. The cog-gearing is different.

36 X Q. 49. Were these parts taken out of this Ex. No. 2 before you made the invention of your two patents just referred to?

Ans. Yes, sir.

X Q. 50. In your business in Spartanburg what did you have to weigh that called for the use of a price-scale?

Ans. I had nothing particularly to weigh in that store, except what I bought and would weigh over as home supplies.

X Q. 51. You mean then that you were simply experimenting with the scale and not using it for practical purposes?

Ans. No, not that I was experimenting with the model or scale all that time, but seeing it was all right, I did my little weighing on it and kept it in the place of other scales.

X Q. 52. What was the date on which you filed the application for the patent on the scale with the horizontal casing?

Ans. I can't remember the date.

X Q. 53. Can you remember the month or year?

Ans. I don't remember exactly; it was last of 1896 or first of 1897.

X Q. 54. Will you please look at the patent last mentioned and state when the application was filed?

Ans. It was filed January 16, 1896.

X Q. 55. Tell me from memory, if you can, the date when the applications for your patents 648,609 and 658,732 were filed?

Ans. 648,609 was filed November or December, 1889, and 658,732 was filed in March, 1900.

CALVIN F. CHRISTOPHER.

37 *Certificate.*

In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

THE COMPUTING SCALE CO. OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE CO., Defendant.

I, I. B. Pless, a Justice of the Peace in and for the County of Haywood, North Carolina, and by agreement between counsel for the respective parties hereto acting as special examiner in the suit identified in the above caption do hereby certify that the deposition of Calvin F. Christopher, a witness produced on behalf of defendant in the above entitled cause was taken before me, pursuant to the Rules of the Supreme Court in Equity as amended, at the residence of said Christopher, Cruso, Haywood County, North Carolina, pursuant to the annexed notice, beginning on the 31st day of December, 1902, and ending on the 1st day of January, 1903, and was reduced to writing, counsel consenting by a competent penman under my direction from the dictation of the witness in the presence of counsel.

I further certify that on the 31st day of December, 1902, I was attended at the residence of the said Christopher by James W. Bevans, counsel for defendant and Alexander S. Steuart, counsel for plaintiff, and the witness, who was of sound mind and lawful age, and said witness was by me carefully examined and cautioned and sworn to

testify the truth, the whole truth and nothing but the truth before the commencement of his testimony.

I further certify that the witness read over his deposition after it was reduced to writing and that all corrections which appear therein were made by the witness before signing his deposition.

By stipulation between counsel the original deposition and
38 the exhibits offered in evidence during the taking of the foregoing testimony are to remain in the custody of counsel for defendant and not to be transmitted to the court by me.

I further certify that I am not of counsel, or attorney or connected by blood with either of the parties to this suit or in any way interested in the event of said suit, but am the brother-in-law of the witness, objection because of this fact being expressly waived by stipulation between counsel.

In testimony whereof, I have hereunto set my hand this 1st day of January, 1903, at Cruso, Haywood Co., North Carolina.

I. B. PLESS,
Justice of the Peace for Haywood County, North Carolina.

39 *Notice of Taking Testimony.*

In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

THE COMPUTING SCALE COMPANY, Complainant,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

Please take notice that defendant herein will take the testimony of C. K. Christopher, of Cruso, Haywood County, N. C., and A. Glenn Pless, of 605 E. Leigh street, Richmond, Va., and others, each and all of whom reside more than one hundred (100) miles from the place of trial herein, at the final hearing for use on behalf of the defendant, before Jos. H. Blackwood, a Notary Public in and for the District of Columbia, who is not of counsel nor interested in this cause, at the office of W. H. Doolittle & Son, at No. 930 F street, in the city of Washington and District of Columbia, on the 13th day of July, 1903, at 10 o'clock A. M., and thereafter from day to day as the taking of the depositions may be adjourned; and such testimony will be so taken in accordance with the provisions of Sections 863, 864 and 865 of the Revised Statutes of the United States and the Equity Rules; and with the stipulation hereinbefore filed.

W. H. DOOLITTLE,
H. P. DOOLITTLE,
Defendant's Counsel.

Dated Washington, July 10th, 1903.

To Messrs. Church & Church, Complainant's Counsel, McGill Building, Washington, D. C.:

Service acknowledged this 11th day of July.

CHURCH & CHURCH,
Complainant's Counsel.

40 In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

THE COMPUTING SCALE COMPANY, Complainant,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

Testimony in behalf of the defendants taken at the office of W. H. Doolittle, Esq., at 10 o'clock A. M., July 13, 1903, in pursuance to the attached notice.

Present: In behalf of the defendant, W. H. Doolittle & Son; on behalf of the complainant, Alexander S. Steuart.

COLONEL K. CHRISTOPHER.

COLONEL K. CHRISTOPHER, a witness called on behalf of the defendant, answers as follows to questions propounded by Mr. W. H. Doolittle.

Q. 1. Please state your name, age, residence and occupation.
A. My name is Colonel Knox Christopher; my age is 24; Cruso, North Carolina; lumberman.
2. Are you acquainted with Calvin F. Christopher, formerly of Spartanburg, S. C.?
A. Yes, he is my father.
3. I now hand you a copy of a patent No. 588,128 of August 17, 1897, issued to Calvin F. Christopher and Colonel K. Christopher, of Spartanburg, S. C., for an "Improvement in Ready Calculators," and ask you if your father and yourself were the applicants and patentees in said patent.
A. Yes.

An uncertified printed copy of said patent 588,128 is now offered in evidence and the Notary is requested to mark same the Christopher & Christopher patent defendant's exhibit.

4. Will you please state to what extent, if you know, your father, Calvin F. Christopher, has made or has not made any changes or improvements in the form of the apparatus set forth in this patent 588,128, which I have just introduced.
41 A. Yes, he has been compelled to make changes, but I don't know just what change he made in the mechanism of the patent, the working parts inside. I know that the outside appearance has been changed, it was made vertical instead of horizontal.
5. What parts have you reference to in your answer as to having been made vertical instead of horizontal, and if you desire you may refer to this patent 588,128 in giving your answer, so as to distinguish the differences.

A. Well, in his last improvement he had the cylinder on the inside of the casing horizontal, I mean vertical, and the casing would go around the cylinder like this patent here, 588,128.

6. Please state what the inside vertical cylinder was for as well as the casing which is around said cylinder as stated in your last answer.

A. The inside cylinder contains the main table, I suppose, I don't know just what you call that; the outside casing had on it near the slot the prices.

7. Your attention is called to the fact that the application on which the joint patent 588,128 was issued is dated January 16, 1896. Now, are you aware of any changes in the apparatus set forth in that patent that were suggested by your father or made by him at the time of said application or at any other time before or subsequent thereto?

This question objected to as leading.

A. Yes, after we made this patent together father improved on it himself and changed it to a vertical scale and made some improvements in the working parts inside.

8. State if you can what those specific changes were referred to in your last answer and when they were made, or suggested by your father.

A. I don't know just what the changes were in the mechanical part, but right after we had the idea of this joint patent, father improved on this scale himself.

9. Were you personally aware of the improvement or improvements which your father made as stated in your last answer?

A. Yes, I was aware at that time he made the improvements all himself.

42 10. What particular time do you refer to in your last answer?

A. Right after we returned home from Washington, I don't know the date, but we had been here in the interest of the first patent, the joint patent.

11. What do you mean by your last answer as to being in Washington in the interest of your joint patent?

A. My father and myself came to have this joint patent patented in the Patent Office here at Washington.

12. Was the application for that joint patent prepared in Washington during the time of your visit here for that purpose?

A. Yes, sir; it was prepared by C. A. Snow & Co.

13. The application for that joint patent is given in said patent as January 16, 1896. Can you state how long before that date, you and your father came to Washington for the purpose of having that application prepared?

A. I don't know what date we came.

14. Can you state how long you remained here after the application was prepared?

A. No, sir; I don't know exactly how long we were here.

15. Did you return from Washington to Spartanburg, S. C., you

and your father, directly after such application was filed or how soon thereafter?

A. Yes, sir; we returned soon after, I don't know the date or how long.

16. Can you not state approximately the date, whether in the same month or year, or about when it was that you and your father returned to Spartanburg, S. C., after the filing of that application?

A. I know we returned in the same month, for we wasn't gone over a week and a half at the most.

17. Now, will you please particularize to a greater extent than you have what the improvements were that your father made after the return of himself and yourself to Spartanburg and as referred to in your answer to Question 9?

A. He had an upright spring and a kind of a half moon line of cogs run in a small pinion on an axle, that stood upright also with the upright drum fastened thereon. On the same level that
43 the spring was fastened to the hook that the pan hung on. That is about as near to it as I can get.

18. In regard to the features mentioned in your last answer do you remember whether your father made any drawings or sketches illustrating the same?

A. Yes, sir; he showed me the drawings and sketches at that time how he intended to construct the scale.

19. What particular time do you refer to in your last answer?

A. Right after he and I had decided on the construction of our joint patent of the way we intended to have it patented.

20. Do you know what became of the drawings and sketches referred to in your answer to Question 18?

A. I would suppose that father has some of them yet.

21. Now, do you know whether or not the features you have referred to as having been put in the form of drawings and sketches by your father were ever put into the form of an apparatus or machine?

A. Because I saw a scale in working order and in use in the shops there where I worked, which was my father's shop.

22. Where was this shop?

A. In Spartanburg, S. C.

23. State, if you can, who it was that made that scale or worked upon the same in making it?

A. My father put it together, but Dr. A. G. Pless helphed father to make the calculations for such scale. Also Alonzo Tanner helped to make the calculations. I did some of the work on the machinery part of the scale.

24. Now, can you state the dates when these things were done, when was it that Pless and Tanner helped your father to make the calculations referred to in your last answer?

A. I don't know the exact date, but it was soon after he returned home from Washington.

25. What was the character of the work on the machinery part of the scale which you did as referred to in your answer to Question 23?

A. I did such as boring small holes in the frame work, turning up of spindles and setting the pinion on.

44 26. Referring to the calculations for the scale, as is stated in your answer to Question 23, which Dr. Pless and Mr. Tanner helped to make, in what form was such calculations made, if you remember?

A. I don't remember.

27. Well, on what part of the apparatus were such calculations intended to be used?

A. On the drum on the inside of the casing.

28. How were they to be applied to such drum?

A. Why, father said that they would be lithographed on paper and pasted around this inside drum.

29. Of what material was the drum made, or of what material was it proposed to be made?

A. Father proposed to make it of light pasteboard or sheet aluminum.

30. Do you know whether he ever actually made that drum of either of those materials?

A. Yes, sir; that scale we had in the shops was of pasteboard.

31. Can you state if these parts which you have testified about, the calculations on the drum and the drum itself on the inside of the casing, the frame work, the spindles and pinion, were all assembled in an apparatus, and if so at what time?

A. Yes, they were all assembled in that apparatus, but I don't know at what time.

32. State every part and feature of that apparatus in which these parts were assembled as you recollect the same.

A. Well, first there was an arch stand which supported the entire scale, the drum part; the outside casing was suspended from the top of this arch. This inside drum which contained this table of figures went in this outside casing from the bottom; the outside casing had a slot running from top to bottom; on the edge of this slot was prices. Coming out from the bottom of this casing near the center was the hook on which the pan was suspended. I remember when any article was placed on the pan that the drum on the inside would revolve according to the weight, and by that means
45 was able to get the weight and also the price of the article by the appearance of the figures in the slot. That's about all I remember.

33. I now hand you certain parts which have heretofore been introduced in evidence in this case and which are marked defendant's exhibits Nos. 1, 2, 3 and 4, and ask you if you ever saw any one of these parts before this examination.

A. Yes, I have seen them.

34. Well, will you take each of said parts and state what it represents, what it was designed for, when you first saw them, and what was done to your knowledge, if anything, with said parts, giving fully your knowledge in regard to the history, construction and operation of the same.

A. This Exhibit 1 is the vertical pinion and spindle which revolves the inside drum. Exhibit 2 is the main frame which contained the machinery on the inside of the entire scale. Exhibit 3

was merely an experimental piece, which I don't think he used in the scale. Exhibit 4 was the first idea used to revolve the inside drum without the use of cogs. I don't think he ever used this in the finished scale.

35. Do you know who produced or worked upon any of these exhibits just referred to by you?

A. Yes, sir; I produced that line of cogs myself, Exhibit No. 2, which was taken from an old arc light.

36. Where did you procure that part from an old arc light?

A. Mr. D. E. Fleming, superintendent of the Aetna Light and Power Company of Spartanburg gave it to me.

37. Did you tell him what you wanted it for?

A. I told him that father wanted it to use in some of the experiments.

38. Well, after procuring this part of Exhibit from Mr. Fleming, what did you do with it?

A. I turned it over to father with some other wheels and gearing taken from this arc light.

39. What was the cog part, as shown in Exhibit No. 2, designed to do in the apparatus?

A. It was designed to revolve this spindle which supported the inside drum.

46 40. What changes, if any, were made on this cogged arc part to adapt it to the frame or apparatus in which it was put?

A. It was necessary to cut it the right length and drill holes through it in order to fasten it on main lever.

41. I notice brass post on one end of lower arm of said arched part, what is that for?

A. That was to hold one end of the spring.

42. What spring?

A. The scale's spring.

43. Well, what was the object and operation of this scale spring?

A. This was a spring scale. When the article was laid on the pan of the scale this spring was drawn out from the weight laid down.

44. State, if you know, who it was who worked upon this frame and the cogged lever to adapt them to each other. In other words, who put them together and did work upon them?

A. I did some of the work myself.

45. What work did you do upon them, Mr. Christopher?

A. I drilled some of those little holes in there for the spindle.

46. Where was this frame part procured, or who made it?

A. I don't remember where father got it.

47. Now, can you tell us when it was that you worked upon this Exhibit No. 2, as you have just testified?

A. I don't know the dates. But it was soon after we went back from Washington.

48. You have referred to a pan of the scale in your answer to Question 43, to which was connected a spring. State, if you please, how this pan was attached to the spindle.

A. That pan wasn't attached to the spindle; it was attached to the same lever as the spring was attached.

49. Well, what lever is it that you have just referred to?

A. I referred to this arched line of cogs.

50. How was the drum part referred to in your answer 32 connected to the spindle? I refer to the revolving drum on which the calculations were put.

A. The spindle passed up through the center of this drum and was bolted on with a small nut in the top of the drum.

47 51. I now hand you a copy of a patent No. 648,609 of May 1, 1900, issued to Calvin F. Christopher for improvements in price scales, the application for which was filed December 9, 1899, and ask you to state whether you have seen said patent before this examination.

A. Yes, sir.

The counsel for defendant now offers in evidence an uncertified copy of said patent 648,609, and requests the Notary to mark the same Defendant's Exhibit Christopher Patent 648,609.

52. Do you understand the apparatus described in the patent I have just referred to?

A. Well, not particularly.

53. Do you understand so much of it as to enable you to state what differences, if any, in general or in particular there are between the apparatus described in said patent and the apparatus which you have described as having been made by your father and on which you also did some work, and also whether there are any resemblances between the two devices.

A. Well, the general appearance is nearly the same. Yes, there is a good deal of resemblance in the devices.

54. Please state what those resemblances are.

A. The way the pan is suspended, the only difference being a needle moves in this case, where in the other case, the first, the drum revolved.

At 12.30 P. M. adjourned until 1.30 P. M.

Examination resumed after recess.

55. Please take this copy of the Christopher patent 648,609 and state what parts in the drawings of said patent as represented by the figures or numbers on such part resemble the parts which you have referred to in your last two answers as resembling each other.

A. Well, this pan, No. 48, and frame, which supports the pan, No. 49; the spindle, No. 35; the support that holds the scale up, No. 8 and the bed, No. 1 resembles that of the scale we had there

48 in the shops. The position of the drum, No. 13, is the same; the pan hung on there pretty much the same way, at No. 50.

56. As the specification in this patent describes 35 as being a horizontal shaft, have you not made some mistake in alluding to such number as the spindle? Please examine the drawings again

and state what number the spindle has that you refer to, if you have mistaken it in your last answer?

A. The spindle is No. 21.

57. The application for this patent of Christopher's 648,609 was filed December 9, 1899. Was it before that date that the apparatus of your father concerning which you have testified was made?

Question objected to as leading.

A. Yes.

58. How long before, if you can say?

A. Well, I don't know exactly, but nearly four years, I suppose.

59. When was it your father first commenced to talk to you or suggest the use of a vertical rotary cylinder on which the calculations were placed?

A. Just before we came to Washington on this joint patent business.

60. If you had any conversation with your father at that time, or about that time in regard to this vertical rotary cylinder, will you state what was said or done by him on that occasion?

A. Just before we started he told me that he had a new scale of his own that he intended to show me later on.

61. Well, how long was it after that occasion did he reveal to you the fact of such new scale?

A. Soon after he mentioned it; only a few days, I think.

62. Do you know of any reason why your father having made the apparatus which you have described nearly four years prior to December 9, 1899, as stated by you, he did not apply sooner for patent?

A. He didn't have the money at that time.

63. The suit brought by complainant is based upon the patent of Austin D. Hayden, of Chicago, Ill., assignor to Computing Scale Company of America. Did you ever meet that Mr. Hayden?

49 A. There was a Mr. Hayden there.

64. Where?

A. At Spartanburg, at our office.

65. At what time was that, to the best of your recollection?

A. After we returned home from Washington and while father was working on this scale, Patent No. 648,609.

66. Did you understand where that Mr. Hayden was from, from what place he purported to have come from at that time?

A. I don't remember where he was from.

67. Do you remember what business he was in, or whether he stated in what business he was in?

A. He said he was traveling for the Dayton Scale Company.

68. Where was he stopping in Spartanburg?

A. The Windsor Hotel.

69. Do you remember to what extent your father explained to him his device or apparatus?

A. He showed him the tables he had made out.

70. Do you know whether he showed him the apparatus itself?

A. Yes, sir; he showed it to him.

71. Where was that apparatus at that time?

Question objected to as it does not appear to what apparatus the question is directed.

A. It was in the Spartanburg bicycle shops.

72. You may now state if you can the general construction of the apparatus at the time that Mr. Hayden saw it when your father showed and explained the same to him.

A. I don't know if he had it altogether at that particular time, but when he put it together the general appearance of it was similar to this No. 658,732.

73. What we wish to know, Mr. Christopher, is in what shape the apparatus was when your father explained to Mr. Hayden as you have testified, whether the device was in the form of sketches or in separate parts or partly assembled or disjointed. In other words, what we want to know is all about what you know concerning this communication of your father to Mr. Hayden.

50 A. Well, he had drawings and sketches and father explained to Mr. Hayden the appearance of the scale when it would be put together by the use of these drawings. He had parts of the machine there. Mr. Hayden saw those parts.

74. Can you state what those parts were?

A. He had some of the inside gearing and the tables laid out and some of the framework.

75. Do you know what, if any other parts, were explained by your father to Mr. Hayden in connection with those parts or in connection with those drawings which you have mentioned?

A. I won't be positive about it, but I think he showed about all there was to it.

76. Did Mr. Hayden explain what his business was at the time of that visit at Spartanburg?

A. Yes, sir; he said he was selling scales for the Dayton Scale Company.

77. Do you know what sort of scales he was selling, or did he inform you?

A. Yes, sir; he sold several scales there in Spartanburg. They were beam scales.

78. Do you know whether anyone was present at those interviews between your father and Mr. Hayden besides yourself?

A. No, sir; I don't remember.

79. Did Mr. Hayden say that he himself was the inventor of any weighing apparatus or scale apparatus at that time?

A. I never heard him say so.

80. Have you mentioned the names of all the parties you can remember who saw the drawings, sketches or apparatus of your father which you have described in this examination as having been made by him?

A. A man by the name of Mr. Jones Tinsley.

81. Where did he reside at the time?

A. Spartanburg.

82. Do you remember how long Mr. Hayden was there on his visit to Spartanburg that you have referred to?

A. I don't remember how long he was there each time. I remember he was there a number of times.

51 83. In what year or years, if you remember, did these visits of Mr. Hayden take place?

A. In the year '97, probably further back than that.

84. Do you know what was done by your father with the apparatus which you have described was in his shop at Spartanburg? Of course, I have reference to the apparatus of which you have been testifying.

A. He took it apart.

85. Before it was taken apart, what was done with it?

A. We used it there in the shop and in the store.

86. What was the extent and character of the use?

A. We weighed small bundles on it, such as express packages and tobacco and cement for bicycles.

87. How large was the apparatus, and what was the heaviest weight the articles had which were weighed thereon?

A. The scales drawed about 12 pounds. They were about 2 feet and a half or 3 feet tall; the drum was about 7 or 10 inches in diameter.

88. Do you remember why your father took the apparatus apart or why it was taken apart, as you have testified?

A. No, sir; I don't remember why it was taken apart.

89. Do you remember anything about your father and yourself removing from Spartanburg to Cruso, N. C.?

A. I remember when we moved from Spartanburg to Inman, S. C.

90. I made a mistake when I asked you about Cruso. Now, tell us if you can the time, or about the time, that you removed to Inman, S. C.

A. I think it was in the year of '98.

91. How long was it before you moved to Inman that Mr. Hayden had his first interview with your father at Spartanburg in regard to the apparatus of which you have testified?

A. I don't remember that.

92. Are you acquainted with Dr. A. G. Pless?

A. Yes, sir; I am acquainted with him.

93. What is your relationship with Dr. Pless, if any?

A. He is my brother-in-law.

94. Did he ever reside in Spartanburg?

52 A. He boarded with us in Spartanburg.

95. When, and for how long?

A. During the time that father was working on this scale, but I don't know how long.

96. Can you mention the year?

A. '96 and '97, I think.

97. Did you ever hear your father explain to Dr. Pless anything about this invention or his apparatus?

A. I think I have. I think he explained the whole thing to him.

98. Did Dr. Pless do anything or render any assistance in regard to the matter?

A. He merely helped to make out the calculations.

99. About these calculations, were there many of them, and how were they arranged, or on what were they put so as to use?

A. Yes, sir; there was a lot of them, and they were made first on scratch pads and then finally set down on the main table.

100. Did he take a short or a long time to make such calculations in arranging for the apparatus?

A. It took considerable time.

101. Tell us whether or not after you and your father returned from Washington to Spartanburg after making that joint application your father continued making his experiments continuously or were there lapses of time during which he gave it up?

A. Why, he continued experimenting on up until the time he got the patent out on this No. 658,732.

102. To what extent from the time your father commenced his first experiments before he took out the joint patent up to the time he took out his patent you just referred to was he industrious in the matter?

Objected to as calling for an expression of opinion.

A. The witness having stated that he believes he does not understand the question, the question is changed to the following form.

103. To what extent was your father working on this invention from the time that you made your joint application on which
53 the joint patent was issued to you and your father up to the time he took out the first sole patent 648,609. I mean how much of his time was employed and how busy was he on this invention during that time?

A. He was quite busy at times. I have known him to stay housed up for a week and hardly see him outside the house.

104. Was he then employed on this invention while so housed?

A. Yes, sir.

Cross-examination by Mr. STEUART:

X Q. 105. How long were you in Washington in 1896 prior to the time when the joint application was filed?

A. I don't remember how long I was here.

X Q. 106. Were you here on New Year's Day of that year?

A. I don't remember.

X Q. 107. How many times have you been in Washington since January of 1896?

A. Four times, I think.

X Q. 108. What were the dates of those visits?

A. I am not able to tell.

X Q. 109. Did your father ever come with you on any of those visits, and if so which ones?

A. Yes, sir; he came along at the time he filed this application for patent 648,609.

X Q. 110. Did you both go back to Spartanburg together?

A. No, sir; we went to Cruso.

X Q. 111. About what date did you go to Cruso?

A. I think about August 6 or 7, as well as I remember, the same year this patent was filed.

X Q. 112. From the copy of the patent 648,609 I see that it was filed December 9, 1899. Do you mean that you went back South and to Cruso in August of that year or the following year?

A. I think that's right.

X Q. 113. Which year is right?

54 A. '99.

X Q. 114. Was the application put in the hands of the attorneys before August of '99 and not filed until December?

A. I don't remember.

X Q. 115. Your father has been examined as a witness in this case, has he not?

A. I think so.

X Q. 116. On looking at his testimony, I find that Question 7 is as follows: "Please state the date, as near as possible, when you 'found out' that the outer fixed casing and inner rotatable casing could be arranged vertically." To which he answered, "I never discovered that until January, 1897." Does that accord with your recollection of the matter as to when he first explained it to you?

A. I think he explained it to me farther back than that, in regard to arranging this cylinder vertically, but I don't just remember about the inside cylinder rotating inside of the outer casing.

X Q. 117. You have been asked about some exhibits in this case and I would now ask you if this spindle "Defendant's Exhibit No. 1" was ever actually used in an experimental apparatus of which the frame and bell crank gear segment "Defendant's Exhibit No. 2" was also used?

A. I think it was.

X Q. 118. Why do you think it was?

A. I think I made that spindle for father to be used in that.

X Q. 119. Did you ever see it in there?

A. Yes, sir.

X Q. 120. In what did it have its bearings?

A. It had some other pieces in there. It had a false bearing in there, I don't remember exactly how it was arranged.

X Q. 121. Will you please take this Exhibit No. 2 and explain to the best of your ability exactly how and where the bearings were arranged, and what their construction was.

A. This is one at the top, and another bearing is fastened down near the middle in some way. That's as near as I can come at it.

55 X Q. 122. Was the slot in the top of that frame always there, or has it been cut out since it has been taken out of the scale?

A. No; that was put in there at the beginning.

X Q. 123. Did the spindle journal in the hole in the bracket at

the center of the frame and pass out at the top through the bottom of the slot?

A. The spindle passed out through the top all right. I don't think it extended down through the bottom of this frame.

X Q. 124. Did the lower end of the spindle fit in the hole of that bracket at the center of that frame?

A. Not of this bracket on here, but of another one.

X Q. 125. Now, what was the upper end of the spindle journaled in?

A. The top of this frame.

X Q. 126. Did it fit back to the back end of the slot and something hold it in?

A. Something held it in. I don't remember whether it fitted against the back or not.

X Q. 127. What held it in?

A. I don't remember.

X Q. 128. Will you please take exhibit No. 1 and see if the pinion thereon will mesh with the rack on exhibit No. 2 as it should do if these parts were intended to work together.

A. No, sir; they don't mesh now.

X Q. 129. It is quite obvious, is it not, that some other rack or some other pinion must have been used in order to make anything that would work at all satisfactorily?

A. No; it is quite possible that this pinion has been moved on this spindle, probably for some other use since.

X Q. 130. Of what material is the bell crank lever in exhibit No. 2 made?

A. Babbitt metal.

X Q. 131. What became of the experimental scale of which these exhibits 1 and 2, and particularly No. 2, formed a part?

A. I am not able to tell you.

X Q. 132. Where did you last see it?

56 A. In the shops at Spartanburg.

X Q. 133. And when did you say that you moved away from Spartanburg?

A. In the year '98, I think.

X Q. 134. Was it there at the time you moved away?

A. I think he had it at that time.

X Q. 135. Was it still in the shop when you went away?

A. He took it apart, I think.

X Q. 136. When—just before you moved away, or how long?

A. Some time before I moved away; I don't know when.

Adjourned until 9.30 A. M. of the 14th inst.

Met pursuant to adjournment at 9.30 A. M., July 14, 1903.

X Q. 137. Was Exhibit No. 2 a part of the scale which you have said in your direct testimony was finished and hanging up at the shop at Spartanburg?

A. Yes, sir.

X Q. 138. Referring now to your answer to Question No. 32, you

stated that the outside casing was suspended from the top of an arch. Please tell us if it was suspended by a link so that it could swing, or how it was suspended.

A. I don't remember exactly whether there was a link or not. I am under the impression there was a link.

X Q. 139. Was something attached to the center of the top of the casing and that something attached to the arch? And if not, what was the construction of this part of the machine?

A. It was suspended from the arch. I won't be sure, but I think it was a link though.

X Q. 140. Could the whole scale and casing swing from the device, link, or whatever it was?

A. Yes.

X Q. 141. In this respect, then, it differed from the scale shown in the Christopher Patent 648,609 and from the scale shown in the Christopher Patent No. 658,732, where the casing is shown as modeled rigidly on a frame so that it cannot swing. Is that correct?

A. Yes; that isn't just the way the one he had was sus-
57 pended. I see in No. 648,609 that the cylinder is supported instead of being suspended by the frame or arch. No. 658,732 is also supported in a similar manner to that of No. 648,609.

X Q. 142. Referring now again to exhibits Nos. 1 and 2, was the rotating drum or part connected with the extreme top of the spindle or the bottom of the spindle or where was it connected?

A. I don't remember; I think it was the top.

X Q. 143. Now, where was the bearings for the top of the spindle, in the frame, exhibit No. 2, or in something else?

A. It was in the frame, exhibit No. 2.

X Q. 144. How was this frame supported in the scale?

A. I don't remember that.

X Q. 145. Was the outside casing which was suspended from the arch closed at the top, so that the rotating drum was put in from the bottom?

A. I am not sure about that, but it seems that it was.

X Q. 146. What were the little slots in the brackets under the top of the frame in exhibit No. 2 used for?

A. I am not able to tell you.

X Q. 147. I will call your attention to the similarity between the shape of this frame, exhibit No. 2, and the shape of the frame shown in Figure 3 of the Christopher Patent No. 648,609, and will ask you, if as a matter of fact this frame was not made here in Washington and about the time your father was here preparing for said last-mentioned patent. In this connection I will also call your attention to the fact that the bearings for the bell crank lever is on a pin located in the extreme top of a side bracket of the frame, showing that said bracket was never intended to support such a pin. Please examine this exhibit and patent carefully and give us the benefit of your knowledge on the subject.

A. If my father made any frames or had any castings made while here in Washington during the time this patent No. 648,609 was filed, I am not aware of it.

X Q. 148. Did your father have any frames or parts of the scale made here in Washington at any time?

58 A. I don't know.

X Q. 149. Didn't you live here in Washington with your father at one time?

A. Yes, sir.

X Q. 150. How long did you live here and between what times?

A. I don't know the dates, but we lived here while this first patent was filed, No. 648,609.

X Q. 151. What business were you in here, or was your father in?

A. I was working with the National Conduit and Cable Company, I am not sure, but I think father had a bicycle repair shop.

X Q. 152. Did he have any scales here to your knowledge?

A. I don't remember of his having any complete scales.

X Q. 153. Well, then, any scales that he had, so far as you know is true, he left in North Carolina when he came to Washington, did he not?

A. So far as I know, he did.

X Q. 154. From your recollection, how long would you say he was here in Washington?

A. Six or eight months.

X Q. 155. In both of your father's patents, No. 648,609 and No. 658,732 I notice that there is a vertically extending rack-bar meshing with a pinion on a horizontal shaft or spindle and a mitre gear on this shaft or spindle meshes with a similar gear on a vertical shaft or spindle. Will you please tell me, if you know, why the segmental rack and bell crank lever of exhibit No. 2 was abandoned and this form of gear I have just described as being in the patent employed instead?

A. I don't know why it was abandoned.

X Q. 156. When did you first see the form of gear shown in these two last-mentioned patents applied in the scales, if you ever saw it?

A. I am not sure, but I think I saw a model gearing like that in Dunham's model shop, but I don't know when it was.

X Q. 157. Where is Dunham's model shop?

A. On G Street between 7th and 8th, Washington, D. C.

59 X Q. 158. Did you live with your father here in Washington when you both lived here?

A. Yes, sir.

X Q. 159. And, you went to his bicycle repair shop more or less frequently, did you not?

A. Yes, sir; I was there pretty frequently.

X Q. 160. You have spoken in your direct examination of a Mr. Jones Tinsley. Who recalled that name to you and when, preceding this examination?

A. Didn't any one but myself.

X Q. 161. You have also spoken of a Mr. Hayden. Who introduced you to him?

A. I have forgotten who introduced me to him.

X Q. 162. When and under what circumstances did you first meet him?

A. I don't remember.
X Q. 163. What were his initials?
A. I am not able to tell you; I don't remember his initials.
X Q. 164. How old a man did he appear to be?
A. He looked to be about 25.
X Q. 165. And that was in what year?
A. '97, I think.
X Q. 166. Was he a tall man or a short man?
A. He was of medium height, as well as I remember.
X Q. 167. Was he heavily built or slender?
A. He looked as if he weighed 160 or 170 pounds.
X Q. 168. Was his face smooth or did he wear a mustache or beard?
A. I don't remember whether he wore a mustache or beard or not.
X Q. 169. Can you not recall whether he had a smooth face?
A. I won't be positive about it; I think he had a smooth face though.
X Q. 170. How often did you ever see him?
A. I saw him quite often.
X Q. 171. Did you get pretty well acquainted with him?
A. Not particularly acquainted with him, but I knew him well when I saw him.
60 X Q. 172. Would you recognize him now if you saw him?
A. I think I would.
X Q. 173. And yet, you say that you can not recall that he had a smooth face or wore a beard or mustache?
A. No, I am not positive about his mustache.
X Q. 174. Were you present when the scales such as your father had at Spartanburg, were explained to this man?
A. I don't recall any particular time, but I think that I was.
X Q. 175. How do you know as a fact that the scales were explained to him and what was explained to him. Did your father tell you this?
A. I have heard Mr. Hayden say that he thought it would be a good thing and I supposed that it had been explained to him.
X Q. 176. Where were you when he told you that?
A. There in Spartanburg, S. C.
X Q. 177. Whereabouts in Spartanburg? At the hotel, or on the street?
A. There in the bicycle shop.

So far as this witness's testimony showing communication of the invention to Hayden is concerned, it is objected to as hearsay evidence.

X Q. 178. Did Dunham here at his Washington shop make parts of the scale shown in the Christopher patent No. 648,609?
A. I think he did.
X Q. 179. Were any parts of that scale made, so far as you know, before your father moved to Washington?

A. I don't know that there was any of that particular scale made before he moved here to Washington.

X Q. 180. So far as you know, were any parts of the scale shown in the C. F. Christopher Patent No. 658,732 made before your father moved to Washington?

A. Not that I am aware of.

X Q. 181. When your father moved away from Spartanburg, where did he go to?

A. Inman, South Carolina.

X Q. 182. And from there, where did he move to?

A. Washington, D. C.

61 X Q. 183. About how long did he live in Inman?

A. I don't remember.

X Q. 184. Did he live there a year or two years?

A. I don't think he lived there quite a year.

X Q. 185. From Washington, where did he move to?

A. To Cruso, North Carolina.

X Q. 186. Did you go with him on all these moves?

A. Not at once, I didn't.

X Q. 187. Well, tell us when you did go.

A. I went a month or so after.

X Q. 188. Do you mean on each move or one particular move?

A. I mean on the last-mentioned move, from Washington to Cruso.

X Q. 189. You went with him then on the other moves?

A. Yes sir.

Redirect examination by Mr. DOOLITTLE:

R. D. Q. 190. In answer to X-Q. 116 you have testified that you thought that your father explained about the outer casing in a rotatable casing farther back than January, '97. How do you fix the time in your mind as being farther back than that time?

A. Because we had our joint patent patented farther back, and it was right after we decided on the way we would have it patented that father explained this to me.

R. D. Q. 191. Can you say if your father made any further explanations to you about this vertical cylinder from the time you have last mentioned and before January, 1897?

A. Yes.

R. D. Q. 192. How often?

A. Quite frequently.

R. D. Q. 193. Well, at those interviews are you positive that he explained to you the use of a vertical cylinder in connection with an outer casing?

A. Yes, sir; I am positive that he mentioned the use of the vertical cylinder to be used on the inside of an outer casing.

62 R. D. Q. 194. What, if anything, did he say at those times concerning the motion of either of the outer casing or the inner cylinder?

A. That it was the inner cylinder to revolve while the outside casing would remain stationary.

R. D. Q. 195. Did he illustrate his ideas about this arrangement by any sketch or drawings shown to you at those times prior to January, 1897?

Objected to as leading.

A. Yes, sir.

R. D. Q. 196. In what form were those drawings or sketches, on what kind of paper, if made on paper, and were they made with pencil or in ink?

A. I think they were pencil drawings on just common paper.

R. D. Q. 197. Are you positive as to this?

A. Yes, sir; I am positive that I saw some pencil drawings.

R. D. Q. 198. Referring to your cross answers about the spindle, Defendant's Exhibit No. 1, you have stated that you thought that you made that spindle for your father to be used in an experimental apparatus, etc. State whether the screw threads on the opposite end of said spindle were thereon when you made the same, or what you know about them.

A. I don't remember why the threads were on each end.

R. D. Q. 199. Did you put them on?

A. I put threads on such a spindle for him?

R. D. Q. 200. Was that before or after the time that you made the spindle for use in the first experimental apparatus referred to in your answer to X-Q. 117?

A. That was before.

R. D. Q. 201. Was the apparatus of which you have testified operated with this spindle on when said spindle was provided with these screw threads?

A. I would suppose so; but I am not positive, for I didn't put the scale together.

R. D. Q. 202. Who did put the scale together?

A. Father did that himself.

R. D. Q. 203. You have stated in your answer to X-Q. 124
63 that the lower end of the spindle did not fit into the hole of that bracket at the center of that frame, but of another one. What do you mean by this answer? Was there a previous bracket, which had been made and put into that frame? Please explain what is meant by that answer.

A. In the first there was a lug casted in the middle of this frame, Exhibit No. 2, which acted as a bearing for the lower end of the spindle, and was afterwards changed to use another kind of spindle.

R. D. Q. 204. Were there two brackets made, a first and a second one; and if so, whe- were they made and how did they resemble each other, if at all?

A. There was a false bracket made and placed somewhere near the middle of the spindle, which supported the said spindle, Exhibit No. 1.

R. D. Q. 205. Of what material was that false bracket composed?

A. I think it was sheet brass.

R. D. Q. 206. Are you positive as to this?

A. No, sir; I am not positive.

R. D. Q. 207. In connection with the false bracket which you have just testified, was there a cylinder connected with a spindle and used with said false bracket?

A. Nothing but the inside cylinder that contained the main tables.

R. D. Q. 208. At which end of said spindle was the cylinder connected, the upper or lower end?

A. As well as I remember, the top end.

R. D. Q. 209. Was there any arrangement by which it could have been attached and operated on the lower end of the spindle?

A. I don't hardly think there could have been.

R. D. Q. 210. Why not?

A. Why, I think the bar on which the pan suspended would have been in the way.

R. D. Q. 211. Are you positive as to this?

The witness is admonished that in this examination what the Court requires is a positive knowledge of facts known by the
64 witness and not his mere impressions or thoughts and that therefore he must state positively what he knows or does not know.

A. No, I am not positive.

R. D. Q. 212. Now, in regard to the attachment of the outside casing referred to in your answer to X-Q. 138, you have stated that you don't remember exactly whether there is a link or not and that it is suspended from the arch. What was this arch which you referred to in your said answer?

A. That is supported the scale.

R. D. Q. 213. Well, all the scale?

A. Yes, sir.

R. D. Q. 214. Well, please now state what parts were next to the said arch and what parts, if any, was below the parts which were thus connected to the arch? What I want to know is the relative arrangements of all parts in connection with said arch?

A. The arch was composed of a stand or a foot on which this curved piece of metal rested in forming an arch. The cylinder was next to the top of the arch and the suspended pan was near the foot of the arch.

R. D. Q. 215. Referring to your answer to X-Q. 145, you stated that it seemed that the rotating drum was put in from the bottom. What had you reference to in that answer? The bottom of what?

A. From the bottom of the outside casing.

R. D. Q. 216. Well, was the arrangement such that it could have been put in the inside casing in any other way?

A. No, sir.

R. D. Q. 217. You have stated in regard to Mr. Hayden that you heard him say he thought the scale of your father was a good thing and that he told you that in Spartanburg, S. C., in the bicycle shop. Was your father's experimental apparatus present in that shop at that time?

A. I don't remember.

Recross-examination by Mr. STEUART:

R. X Q. 218. You rely on your memory, do you not, for the statement that you had various conversations with your father prior to January, 1897?

A. Yes, sir.

65 R. X Q. 219. Now, why may not those conversations have been subsequent to January, 1897, as your memory seems rather bad as to dates?

A. Because I know we had our joint patent before that.

R. X Q. 220. What was the date when your joint patent issued?

A. I disremember.

R. X Q. 221. What year was it in?

A. '97 was when it was issued.

R. X Q. 222. What was the date when the application was filed?

A. I don't know the date; it was in '96, January, I think. I know it was cold weather here in Washington.

R. X Q. 223. What did you do after that joint patent issued looking towards the manufacture of the scale or the sale of the patent?

A. I didn't do much of anything.

R. X Q. 224. Did you ever make a scale or see one made in accordance with the invention of that joint patent?

A. Yes, sir.

R. X Q. 225. When was it made?

A. Along some time in the same year that the patent was filed.

R. X Q. 226. Was it after or before the application was filed? Or after or before your visit to Washington in connection with the application?

A. I don't remember whether we had a model or not.

R. X Q. 227. Then the scale may have been made after your return home, may it not?

A. Possibly it was.

R. X Q. 228. Now, in that scale of your joint patent, No. 588,128, was there a drum which was rotated?

A. Yes, sir; there was a drum there.

R. X Q. 229. Was not that drum connected to both ends of the spindle?

A. I think so.

R. X Q. 230. Where were you when you put the screw threads on both ends of this spindle, Exhibit No. 1?

A. I was in the bicycle shop there at Spartanburg.

R. X Q. 231. Now, may not those screw threads have been 66 for the purpose of attaching both ends of the drum to this spindle?

A. No, sir.

R. X Q. 232. Why not?

A. Because we couldn't use the pinion in the middle of the spindle while both ends of the drum was fastened on the spindle; why, both ends of the spindle wasn't fastened on the drum. There was some of the spindle extending out from the end of the drum.

R. X Q. 233. What I want to know is how you identify positively

this spindle, Exhibit No. 1, as the spindle you made for use with a vertically arranged drum, in view of the fact that the spindle will not fit in the frame of Exhibit No. 2 nor the pinion thereon mesh properly with the rack bar of that Exhibit No. 2. If there is anything about this spindle which enables you to say positively that it was made for use in Exhibit No. 2, please indicate what it is.

A. Well, I made such a spindle for his scale, and it is possible that this spindle has been moved on the axle since it was worked in that scale.

R. X Q. 234. Will you take Exhibit No. 2 and look at the slot at the upper end of it and tell me if you do not find at the bottom of said slot a smooth bearing which shows that the spindle that was used in that frame turned in said bearing?

A. No, sir; I can't tell there was ever a spindle that wore that bearing that way.

R. X Q. 235. Well, did the spindle that was put in that frame fit in that bearing?

A. It fit in there, but I don't know how far in it went.

R. X Q. 236. Did it take a bearing in there?

A. Yes; it had a bearing in that slot.

R. X Q. 237. Will you take this spindle, Exhibit No. 1, and tell me if it is not too large to go back in the smooth part of that slot which formed the bearing?

A. Yes, sir; that spindle is too large to fit way back in there, but in order to be operated above this lower bearing it wouldn't be necessary to work back in the back part of the bearing.

67 R. X Q. 238. I want to know what the facts are and not what your present conclusions are, and now I ask you where that spindle had its bearing at the upper end in that scale which you say you saw put together with a vertical spindle.

A. I am not able to tell you, sir, where it had its bearing.

Asbury G. Pless.

Asbury G. Pless, a witness called in behalf of the defendants, answereth as follows in reply to questions by W. H. Doolittle, Esq.:

1. Please state your name, age, residence and occupation.

A. Asbury Glenn Pless; residence, 605 E. Lee street, Richmond, Va.; occupation, dentist; age, 28.

2. Are you acquainted with Calvin F. Christopher, formerly of Spartanburg, S. C.?

A. I am.

3. When did you make his acquaintance?

A. I have known him almost all my life.

4. What relation do you bear to Mr. Christopher, if any?

A. He married my sister.

5. Did you ever live in Spartanburg, S. C.?

A. Yes, sir.

6. At what time?

A. During the winter of 1895-96.

7. Where did you live at that place at that time?

A. I boarded with Mr. Christopher.

8. What was your business at that time while living there?

A. I was at school.

9. While so living with Mr. Christopher did you learn anything about an invention or apparatus which Mr. Christopher may have made in regard to scales or a scale of any description?

A. Yes, sir; he was working on scales at that time.

10. Please state what you remember in regard to such scales; what was their character, so far as you know?

68 A. Well, the scales were computing scales, they weighed and also computed.

11. What were the computations for?

A. So they would give the value of an article, so much a pound.

12. Did you see any device on which such computations were placed?

A. Well, they were placed on paper and this on a cylinder.

13. Did you see or have anything to do with the making of such computations and the placing of them on the cylinder?

A. Nothing to do with placing them on the cylinder, but I did give some assistance in making the figures or calculations on the paper.

14. On what material were these figures or calculations put which you made?

A. Well, I don't know that the figures I made were applied to the cylinder, but I suppose a copy of them. We used just common foolscap paper.

15. Do you know who made the cylinder which you have just referred to?

A. Mr. Calvin F. Christopher.

16. Did you see such cylinder after such computations or calculations or figures were put on paper and applied thereto?

A. Yes, sir.

17. Where was this and when to the best of your recollection?

A. This was in his residence during the winter of 1895-96.

18. Did Mr. Calvin F. Christopher give you any explanation as to how he proposed to embody such cylinder in any form of apparatus and how he proposed to work the same?

A. Yes, sir; he explained something about that.

19. Will you please state to the best of your recollection and belief what such explanations were?

A. Well, he had so many ways of trying his scales that I not being much interested I don't know whether I can give you any explanation.

69 20. Did he show you any sketches or drawings of the same?

A. Yes, sir; he had some there.

21. Do you remember what such sketches or drawings represented?

A. They represented the scale, but I don't know that I could describe that scale.

22. Do you remember how Mr. Christopher proposed to set up that cylinder and operate the same, either as a calculator or as means for weighing articles, and in this connection you may state if you will whether you saw during the time mentioned any model or apparatus in which said cylinder was used?

A. I remember seeing a calculator. Now, I mentioned before that this paper was on a cylinder. I believe there were two papers, one on the cylinder and one on a casing surrounding the cylinder. The calculator contained the cylinder and casing, as well —I remember, and as to the position of it you could hold it in any position you wanted. I think you turned the cylinder with the hand to make the calculations.

23. Did you see him hold and turn that cylinder in various positions?

A. I think I have.

24. What were those positions?

A. Well, I suppose the name would be vertical, horizontal and diagonal.

25. How long did you remain at Spartanburg?

A. I think I was there about two and a half months.

26. Can you tell the date when you left there?

A. I left there in January, 1896, but I don't know the day of the month.

27. Where did you then go?

A. I went to Cruso, North Carolina.

28. Well, at the time you left Spartanburg, in January, 1896, and back to the time you arrived at Spartanburg and the house of Mr. Christopher, was he to your knowledge busily engaged in work on this scale business or on a calculator?

70 A. Yes, sir; he was working on the scale most of the time as far as I know, because I know he had me to assist him on different papers of different kinds. He seemed to make changes, he would work on one and possibly that wouldn't suit him and he'd work on another.

29. Were there any other persons to your knowledge who assisted Mr. Christopher in his operations or work?

A. There were others there who I believe assisted him, but I can't say that I ever saw them.

30. Can you give their names?

A. Yes, sir.

31. Please do so.

A. His son, C. K. Christopher, and William Welch. There was a young lady there at that time, Miss Rosa Kinsland.

32. Now, Doctor, can you state about what the condition of this work or experiments of Mr. Calvin F. Christopher was at the time of your leaving Spartanburg on or about January, 1896?

A. I don't think he had completed the scale when I left there.

33. Do you remember whether Mr. Christopher and his son went to Washington before you left there or afterward?

A. I know that they came to Washington after that, but whether they did before I do not know; possibly they might have come; they occasionally took little trips.

34. What enabled you to state that you know they came to Washington after you left there in January, 1896?

A. I had a letter from one or both of them later stating that they had made a trip to Washington, and some of their people informed me that they had moved up to Washington.

35. You have stated in your answer to my question 22 that you believe there were two papers—one on the cylinder and one on a casing surrounding the cylinder. Do you remember what the paper on the casing surrounding the cylinder was intended to represent.

A. The prices, I believe.

36. Well, do you remember how the cylinder which contained the other paper was intended to operate in connection with
71 said casing so that the prices and calculations could be arrived at?

A. It revolved in the casing and contained the calculations; it had trace lines from weight to price and then to amount or value.

37. How was the casing and this cylinder designed to be arranged in respect to each other; how held or operated in respect to each other, so that these computations could be made?

A. The casing contained a slot. Well, that was to see the figures on the cylinder.

38. Well, how were the figures on the cylinder to be made visible in or through this slot on the casing?

A. Well, in the calculator you turned it in your hand until you got to the number of pounds that you wanted to—it would necessarily have to be pounds, of course—weigh. You would not want to weigh them either if you were using the hand calculator.

39. I now hand you copies of patent No. 588,128, No. 648,609, No. 658,732 and No. 700,919, and ask you to look over the drawings in each several patents and state if you find in any one of them illustrations of the ideas of Mr. Calvin F. Christopher which he had in the winter of '95 and '96 and which you have described in your testimony so far given, and if you find any such representation or device, please refer to it by the number of the patent and the numerals of the part or parts which indicate in said patent that particular part or parts.

A. This No. 658,732, Fig. 9, resembles the calculator in that it is round and appears to contain a cylinder and casing and has those figures on it. I don't say those figures are like the ones I assisted in making. I believe that is all I see here that has any resemblance. No. 700,919 resembles the calculator, Fig. 2, in the same respect as I described the other. It is round and appears to contain a casing and a cylinder with a table of figures.

40. Do you remember whether before you were at Spartanburg Calvin F. Christopher had attached the cylinder and casing which you have described to any particular form of apparatus by which the same could be used practically?

72 A. He had it arranged and was trying weighing on it, but whether I can give the exact state and condition of it I do not know. I can tell how it appeared as well as I remember.

41. Please do so.

A. As well as I remember he had a little pan, and he had the pan out in a horizontal position, of course, and the cylinder was near the pan, and it appears to me it was in a vertical position, but I am not positive as to the position of the cylinder, and the weights were put on the pan and the cylinder would register the pounds and price and value.

Cross-examination by Mr. STEUART:

42. What was the size of the cylinder in that calculator that you have mentioned?

A. I do not remember the exact size, but I would say from 6 to 8 inches in length and 3 or 4 in diameter.

X Q. 43. Was it mounted to rotate on a spindle or with a spindle; which projected at both ends of the cylinder?

A. I think it had a spindle which projected at one end and possibly both.

X Q. 44. The spindle projected beyond the casing, did it not?

A. I think it did at one end.

X Q. 45. Was there anything on that end of the spindle, such as a knob by which it could be turned?

A. I have just been trying to recall to mind how that cylinder was turned. I think there must have been a small knob attached to one end of the spindle.

X Q. 46. Now, this calculator that you speak of, was it designed so that you could calculate the price of goods by the yard, for instance, and in some cases rates of interest?

A. I do not remember about the interest, but you could calculate the price per yard of goods.

X Q. 47. Give us now as well as you can recollect a practical illustration of how you would use the calculator in some particular instance.

A. Well, if you had two chickens at 10 cents each and wanted to know what they were worth, you would turn your cylinder
73 until you could see the 2 through the slot. Then trace a line opposite the 10, the price on the outer casing, and at the junction of the line from the 2 and from the 10 would find the price of their value, 20.

X Q. 48. Where did you see this calculator mounted in conjunction with the little pan you have referred to?

A. In Mr. C. F. Christopher's residence.

X Q. 49. Were they both mounted on a base and the pan at one side or end of the calculator? Or what was the relative arrangement?

A. Yes, sir; I think they were on a base. But I am not sure they were on a base or whether they were swinging and the pan attached to the calculator; I am not sure which.

X Q. 50. What was the cylinder in this calculator made of?

A. Some kind of metal.

X Q. 51. And when it was used in connection with the pan where did the little knob project?

A. I don't remember that it had the knob when used in connection with the pan.

X Q. 52. I would call your attention to Figure 2 of patent 588,128, in which you will see a casing with a cylinder inside of it having calculations on it and a pan on which articles are to be placed for weighing. I would ask you if this does not refresh your memory as to what the construction of the device was that you saw at Mr. Christopher's residence? If it does, state how nearly it agrees with your recollection?

A. The pan resembles that one I saw and the cylinder also, but I do not remember seeing it in that position, although I may.

X Q. 53. Did you ever see the cylinder outside the calculator or by itself?

A. I think I have.

X Q. 54. As you have stated it was made of metal and approximately 7 or 8 inches long and 3 or 4 inches in diameter, please now state, as near as you can what it would weigh.

A. I have no idea.

X Q. 55. Are you familiar with drawings of mechanical objects?

74 A. I am not.

X Q. 56. Have you had any experience at all in reading drawings of patents?

A. None whatever.

Redirect examination by Mr. DOOLITTLE:

R. D. Q. 57. What was your career after leaving Spartanburg in January, 1896?

A. I attended school two years, taught two years and for the past three years been with the Medical College of Virginia.

(Signed) A. D. PLESS, D. D. S.

JULY 17, 1903, 10.30 a. m.

Mr. COLONEL K. CHRISTOPHER recalled by Mr. Doolittle.

Present: W. H. Doolittle, Esq., for the Defendant, and Alexander S. Steuart, Esq., for Complainant.

1. Mr. Christopher, since your examination on the 13th and 14th inst., you have informed me that you made a mistake in regard to Mr. Hayden as to whom you testified in your direct and cross-examination referring to him as the patentee in this case, on whose patent this suit is brought. What explanation do you now wish to make concerning the same?

A. Why, I was mistaken in the name, the names being so much alike and having been so long when Mr. Steuart put the question to me, if I knew Mr. Hayden, why, I answered that I did, but the name was Harding.

2. So that are you now positive that the gentleman's name was not Hayden, the patentee in the patent on which this suit is brought, but that his name is Harding?

A. Yes, sir.

3. Well, does all your testimony in your direct examination and also the cross-examination by Mr. Steuart, apply to this man Harding and not to Mr. Hayden?

A. Yes, sir. Just as I have stated, it is all true, the only mistake being the name.

Cross-examination by Mr. STEUART:

X Q. 1. Then, am I to understand that you do not know Mr. Hayden and that to your knowledge no one by the name
75 of Hayden was ever in Spartanburg and examined your father's inventions relating to scales?

A. I don't know Mr. Hayden. I don't know of any one by the name of Mr. Hayden ever being at Spartanburg and examining my father's inventions.

Redirect examination by Mr. DOOLITTLE:

R. D. Q. 5. Have you ever seen this Mr. Harding since the time that he saw your father's experiments and heard his explanations as you have previously testified in regard to Mr. Hayden?

A. Yes, I have seen him in Spartanburg, about three years ago.

Examination closed.

(Signed) C. K. CHRISTOPHER.

In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

THE COMPUTING SCALE COMPANY, Complainants,
vs.
THE AUTOMATIC SCALE COMPANY, Defendants.

By consent of counsel the testimony in behalf of the defendant resumed at the office of J. H. Blackwood, Notary Public, Atlantic Building, Washington, D. C., July 22, 1903, at 1.30 P. M.

Present: Mr. Melville Church on behalf of Complainants and Mr. W. H. Doolittle on behalf of Defendants.

WILLIAM T. FINCH.

Mr. WILLIAM T. FINCH, a witness called on behalf of the defendant and in answer to questions propounded by Mr. Doolittle, testified as follows:

Q. 1. Please state your name, age, residence and occupation?
76 A. William T. Finch, age 38, residence, Spartanburg, S. C., green grocer.

Q. 2. How long have you been a resident of Spartanburg?

A. 12 years.

Q. 3. And has your occupation been that of green grocer during all of that time?

A. Yes, sir.

Q. 4. Are you acquainted with Calvin F. Christopher formerly of Spartanburg?

A. Yes, sir.

Q. 5. Where does this Mr. Christopher now reside?

A. In North Carolina.

Q. 6. How long have you been acquainted with Mr. Christopher?

A. Something like eleven years.

Q. 7. Where was Mr. Christopher residing then?

A. At Spartanburg then.

Q. 8. State if you can the business in which Mr. Christopher was engaged or what his occupation was during the time of your acquaintance with him?

A. I don't know what occupation he was following when I first met him. I met him and became acquainted with him by being a customer of my store.

Q. 9. Do you know anything about an invention claimed to have been made by this Mr. Christopher relative to computing scales?

A. I saw a couple of models in his store later, the latter part of 1896 or the first part of 1897 that I saw the models in his store.

Q. 10. State if you can what those models related to; what did they possess; what was their nature?

A. A couple pair of scales; one was a counter scale, a computing counter scale, and the other was, so-called, a computing swinging meat scale.

Q. 11. Now will you please state how you came to see those models in Mr. Christopher's store, and tell the court fully all you know about the invention or inventions represented thereby and also state how you fix the date or dates relative to the time of seeing such models?

77 A. My first visit to his store for the purpose of looking at his scale was the so-called counter scale, and that was on his work bench, and he asked me to investigate the computing part of the scale. He placed articles on the scale weighing them showing me that his calculations on the machine were correct; he would weigh articles and figure them on paper and show me that the machine was correct, and asked me after we investigated the correctness of the weighing of the scale, wouldn't I like to have a scale of that kind for my shop; and I told him that I didn't like a counter scale for a meat shop; that I preferred a swinging scale for a meat shop, and he said in a short time I will be able to show you what he called his meat scale—alluding to the swinging scale. Sometime after that, I couldn't say whether it was one month or two months, he came back to my store after placing this so-called meat scale in his show window and asked me also to investigate the correctness of that scale as to the weighing and the calculating part. I told him at the time after investigating this meat scale, that I would like to have a scale of that kind, and he said he hoped to give me the scale pretty

soon, that he was going to Washington pretty soon and that he hoped to have the scale on the market soon.

Q. 12. What was the time, if you can tell, or about the time when this last interview took place?

A. It was in the latter part of 1896 or between the 1st and 16th of January, 1897.

Q. 13. Will you state more particularly, if you can, the form, construction and operation of the device which Mr. Christopher showed to you and explained to you at the time mentioned in your last answer?

A. The drum of the scale, as well as I recollect, was made of tin with the figures, to the best of my recollection, of red ink on paper or pasteboard, I don't know which, I didn't investigate that part to see whether it was on light paper or pasteboard. The scale was swinging to a wooden arch with the drum hanging, you might say, endways, up and down, with a porcelain pan to place the articles to be weighed on.

Q. 14. Did you see any articles weighed upon that scale?

A. Yes, sir.

78 Q. 15. Do you remember what those articles were?

A. No, sir; I could not say; some of the articles in the store. He weighed more than one to show the correctness of the scale as to its computing part and weighing qualities.

Q. 16. Can you state about what size this scale was? What were its dimensions, as well as you recollect?

A. To the best of my recollection the drum would run ten or fifteen inches, possibly longer. As for the size of the drum I should think it would measure about eight or ten inches around, as near as I can remember. I did not measure it.

Q. 17. When you saw one or more of the articles weighed upon this apparatus, as you have stated, what did you see in such operation; what were the parts displayed to you?

A. The amount of pounds, the prices ranging anywhere, but I think from 4 cents up to thirty cents, or something like that—I would not state whether it ran to 24 cents or 30 cents; that is so much per pound.

Q. 18. Well, on what parts or at what places on the apparatus were the pounds and the prices marked or arranged?

A. The figures were on the inside of the tin drum on this paper or pasteboard—paper, I think.

Q. 19. How were the figures displayed to you, whether as to the pounds or as to the prices on the apparatus that you saw?

A. There was an opening up and down the drum of the scale, through which you could see the figures as they turned after placing an article on the plan.

Q. 20. In what part of the apparatus was this opening made?

A. To the best of my recollection it was the front of the scale. The opening was cut out of the tin drum, or the drum was made with the opening in it, something like an inch wide—that is my recollection of it.

Q. 21. Was this drum covered or uncovered?

A. The figures were covered with this tin drum.

Q. 22. Did this tin drum which covered the figures revolve or was it stationary?

A. It was stationary to the best of my recollection. I did not investigate that part of it.

79 Q. 23. Did the part on which the figures were placed revolve, or was that stationary; the figures I refer to indicating either the weight or the prices?

A. Yes, sir; that would revolve after placing an article on the pan of the scale.

Q. 24. Are there any other circumstances than those which you have mentioned, Mr. Finch, which enabled you to fix the dates you have referred to as having seen this apparatus of Mr. Christopher's?

A. Yes, sir.

Q. 25. Please state the same fully?

A. In January 1897, I hired a young man to work for me, and he took charge of my books shortly after being employed by me, and on my investigating the scale over at Mr. Christopher's store, he was not working for me at that time. A few days after he commenced to work for me he suggested that I buy a double dial scale; I only had a single dial scale at that time. That brought about the subject of scales, and I said to him that Mr. Christopher had a model of scale over there in his show window across the street, and we would step over there and look at it. That enables me to recollect the neighborhood of the date that I first saw the scales in Mr. Christopher's shop. It was sometime before that that I saw the scale in Mr. Christopher's shop.

Q. 26. What was this young man's name?

A. C. F. Younger.

Q. 27. Do you know where he now lives?

A. Spartanburg.

Q. 28. Did he and you go over to Mr. Christopher's shop to see this scale as you had stated?

A. Yes, sir.

Q. 29. Was it operated in the presence of you both.

A. Yes, sir.

Q. 30. When so operated what was the relative position of the pan or receptacle on which the article to be weighed was placed in respect to the revolving drum or similar part on which the figures were placed, and its surrounding casing?

A. The pan was hanging directly under the drum.

80 Q. 31. Do you know, Mr. Finch, how widely this invention of Mr. Calvin F. Christopher, was known at Spartanburg, whether to your knowledge people generally were talking about it?

A. Occasionally, I have heard people passing speak about his scale, after he placed his scale in the window. He placed it almost on the sidewalk, right in his show window where people could see it.

Q. 32. Can you state how long that apparatus remained in the

window of Mr. Christopher's store after the occasions which you have described?

A. No, sir, I have no recollection as to how long it stayed there.

Q. 33. Do you know anything about when Mr. Calvin F. Christopher removed from Spartanburg?

A. To the best of my recollection he moved away from there anywhere from—about 1898 to the best of my recollection, he may have moved away somewhere between 1897 and 1899, but I do not recollect when it was between those dates.

No cross-examination.

William M. Bomar.

William M. Bomar, a witness called on behalf of the defendant and in answer to questions propounded by Mr. Doolittle, testified as follows:

Q. 1. State your name, age, residence and occupation.

A. William M. Bomar, age 59, residence Spartanburg, S. C., occupation real estate broker.

Q. 2. How long have you lived in Spartanburg?

A. I was born and raised there.

Q. 3. Are you acquainted with Mr. Calvin F. Christopher formerly of Spartanburg, and now of North Carolina?

A. Yes, sir.

Q. 4. When did you become acquainted with him?

A. It has been twenty-odd years ago.

81 Q. 5. The Calvin F. Christopher I have reference to is the patentee of United Letters patent relating to certain improvements in price scales or computing scales. Do you know anything about this Mr. Christopher having made any such invention?

A. Yes, sir.

Q. 6. Please tell all about what you know concerning such invention of Mr. Christopher's?

A. Well, the first I knew of his having an idea of the scale business, or about the first was in 1893. He had talked to me about it along about that time. He came in and wanted to buy a pair of scales that I had, that is my brother and myself. It was a pair of hanging scales it was used then for weighing meats, they were used for that purpose. He told me what he wanted them for, and specified that he was going to make a scale of this dimension. He figured on the thing and talked with me about it back and forth from time to time and after a while he jumped off on to another kind of a scale. He was principally, you might say, at work on the computing part of each one, I think he carried them both along at once, and then he mixed up a calculator with it, as well as I remember he had them about the same time. I quit business about them in 1893, that was the time I sold him the scale. Afterwards in 1894 I went into machinery business, my brother and myself. During that time Mr. Christopher went to Spartanburg and went into the bi-

cycle business. He had been away somewhere. I would say, in 1896, as my recollection about it, that he went in business down there, working at that same thing. I didn't see anything of the scale business except the figures until that time, and about the time he went into that business or a little after, I saw this model of his hanging in the window. Or the first I saw, as I remember now, were the parallel scales, and as well as I remember he called my attention to it, I was passing there continually. That was prior to March 1st, about that time. The only way that I have of knowing the dates, not expecting to be called on anything of this kind, and after Mr. Welfley went down there, I commenced to get data as near as I could. I went to several persons and at last
82 struck Mr. Sam. McCants who told me that he went into business there on March 1, 1897, and that Christopher was there at that time. He did not remember how long Christopher had been there at that time, neither did I, but I had seen that I think about that time; then I went and examined Mr. McCants' books and found his cash book and stock book corresponded with what he had told me. He worked on that then off and on, I don't know how long.

Q. 7. In the answer you have just given Mr. Bomar, you state that about 1896 Mr. Christopher went in business down there working at that same thing, and that you didn't see anything of the scale business except the figures until that time. What figures had you reference to, and how did you see them?

A. It was a computing calculation made on paper with a pencil. He had Mr. Tanner and a young lady, I believe, and a young man also, at that time helping him to make figures.

Q. 8. What was the arrangement of these figures and calculations, and what were they intended to represent?

A. Well they were to show the weight and what anything would bring at a given price.

Q. 9. You say this was in 1896?

A. I didn't say positively it was 1896—it was before March 1, 1897, I think it was about that far back that he was there.

Q. 10. You have stated that the first you saw were the parallel scales—what do you mean by the parallel scales?

A. It was a calculator that he intended for a counter scale.

Q. 11. What was its arrangement?

A. Well about as I have stated before.

Q. 12. How did it work?

A. Well it was to tell the weight of anything and what it would bring at a given price.

Q. 13. You have spoken about a model of Christopher's hanging in the window. When was this?

A. That is the time I speak of, about March 1, 1897, or prior to that.

Q. 14. Can you describe that model which you thus saw
83 in the window? In the first place tell us what window it was, where, in what place, and then proceed to describe it if you can?

A. It was, I think, on the right hand side as I remember it—on the left hand side of the door that went into his shop—he had two doors. Or, you might say, I think it was between the two doors—that is the same thing—I would not be positive about that, but I think that is the way it was. Well, he had a thing suspended, as well as I remember, about 3 feet high, it was hooked to an arch which he had prepared for the business, of wood, I think. It was a tin-constructed thing; it was, I suppose, about eight inches in diameter, and something like twelve inches long, and when anything was weighed the cylinder revolved, the figures showing in the center of the cylinder—a slot prepared to show the figures.

Q. 15. Did it have any attachment on which to put the articles to be weighed?

A. It had a bowl of some sort to hold whatever you wanted to weigh.

Q. 16. Where was this attachment put?

A. It was hanging—suspended under the cylinder.

Q. 17. What movement did the cylinder have when an article was being weighed?

A. It revolved.

Q. 18. Do you know what the mechanism was that made it revolve?

A. I do not.

Q. 19. Was such mechanism, if any, concealed from your sight in the apparatus?

A. Yes, sir—I couldn't see it—didn't see it, as I remember of.

Q. 20. How was this cylinder arranged, in a horizontal position or a vertical position?

A. In a vertical position.

Q. 21. You have said that the cylinder revolved, the figures showing in the center of the cylinder and a slot prepared to show the figures. In what part was this slot made?

A. Well, it was on a side of—on the outside of the tin or through the tin, that covered the cylinder.

84 Q. 22. Can you say how the weight and the cost of the article weighed was pointed out on that apparatus?

A. Well, it had a little, as well as I remember, some little extension to show just where the figures come to.

Q. 23. Where was this extension put—on the outside casing or the inside cylinder?

A. On the outside, I think. I didn't notice the thing very minutely.

Q. 24. Who was present, Mr. Bomar, if anyone else, when you first say this apparatus in Mr. Christopher's shop?

A. I couldn't tell, sir.

Q. 25. Did you see it more than once?

A. Yes, I saw it dozens of times, I reckon, hanging there.

Q. 26. In what year did you see it dozens of times?

A. Along about as I have stated in—I will say, in the last of 1896 or the first of 1897.

Q. 27. Did it seem to work all right or was there any complaint as to the working of this apparatus, as to whether it was successful or not?

A. I don't remember of any complaint.

Q. 28. In what business was Mr. Christopher engaged while this apparatus was displayed in his shop?

A. Repair shop, renting bicycles and selling.

Q. 29. What kind of work was repaired?

A. I think it was to repair bicycles, fix guns, and any small machinery.

Q. 30. Do you know whether or not Mr. Christopher's shop was frequented daily by many people?

A. Yes, quite a number of people were in there.

Q. 31. Do you remember when Mr. Christopher moved away from Spartanburg?

A. Not exactly, No sir.

Q. 32. Well, can you state about the year?

A. It must have been the latter part of 1897 or 1898—the first part of 1898, somewhere along there, I don't remember.

Q. 33. Do you remember the circumstances of Mr. Christopher moving away from the town?

A. Yes, sir.

85 Q. 34. Was this apparatus that you have described as hanging in his shop, there until he moved away?

A. I don't remember.

Q. 35. Have you stated all the facts and circumstances which you can recollect that enables you to fix the date of having seen that apparatus in Mr. Christopher's shop, before March 1, 1897, as you have testified?

A. Well, I saw Mr. Bull and asked him if he could give me any dates as to when Mr. Christopher was there and after thinking awhile he said he could tell by the time he bought a stove from Mr. McCants'. He said he was there then.

By Mr. CHURCH: Answer objected to as hearsay and secondary.

Q. 36. Were any dates or books shown to you by which Mr. Bull was able to fix the date when he bought that stove?

By Mr. CHURCH: Objected to as calling for secondary evidence.

A. He showed me a receipt that he had, which he got when he paid for the stove, which he said he had bought when Mr. Christopher was there, and that was in September, 1897.

Cross-examination by Mr. CHURCH:

X Q. 1. This apparatus that you say you saw hanging in Mr. Christopher's shop was a mere model illustrating the principle of a scale that he had invented, was it not?

A. I think so.

X Q. 2. He did not have any for sale like it?

A. No sir.

X Q. 3. And the apparatus was not such a one as you would have

like to have used in your business for buying and selling articles to be weighed, was it?

A. I don't think it would be very durable, sir, nor very ornamental.

X Q. 4. On the whole then, it was a rather crude affair, though it may have embodied a valuable principle, is not that the fact?

A. Well, yes—to show what he intended—about all, it was a model.

86 X Q. 5. In giving dates as to the time when you saw this apparatus in Mr. Christopher's shop and as to when Mr. Christopher left Spartanburg you have relied largely upon what Mr. McCants and Mr. Bull have told you, have you not?

A. Well, on what they told me and what I saw in the books.

JULY 23, 1903—11 a. m.

Testimony in behalf of the defendants resumed at the office of Mr. W. H. Doolittle, and Mr. CALVIN F. CHRISTOPHER recalled and resworn and testified as follows in answer to questions by Mr. DOOLITTLE.

1. Are you the same Calvin F. Christopher who testified before in this case the 31st day of December, 1902, at Cruso, North Carolina?

A. Yes, sir.

2. Mr. Christopher, you have stated to me and to the defendants Company that since you gave your testimony, as I have stated, at Cruso, N. C., you have discovered that you were mistaken in some particulars of that testimony and I now ask you to look over a copy of that testimony and state in what respects such mistake was made and what you have to say about the matter.

The re-examination of this witness in respect of matters in regard to which he has already given testimony is objected to as incompetent, the witness being presumed to have been exhausted in respect of such matters.

A. They asked me what date I conceived the idea of these vertical scales. Misunderstanding, I told them January, 1897, but having the scale made and in my possession and in the window at that date, first conceiving the idea of the the vertical scale in 1894 by drawings, for which I bought a scale from Mr. Bomar from Spartanburg out of his beef market made by John Chatillon & Son, in order to get the spring and the pan which pulled it down for weighing purposes to make this vertical scale, but did not make it or commence to make it until the latter part of '96 and finished it and hung it in my window publicly where everybody could see it; had it there in January, 1897.

87 3. What Mr. Bomar do you refer to?

A. W. M. Bomar, of Spartanburg.

4. He is the same one I believe who testified in this case yesterday?

A. Yes, sir.

5. Mr. Christopher, what is the condition of your health and what has it been for some time past?

Objection to Question 2 repeated and it is agreed that the same objection may apply to any other question in the line of examination.

A. My health has been poor for the past two years.

6. To what extent has that illness interfered with your business?

A. Well, it has interfered greatly. I have been bedfast some part of the time, not able to sit up, and it has knocked me out of my work and my studies on my inventions, doctors saying that I should stay in and not worry, throw these things off my mind entirely and let them go.

7. Has this condition of your health interfered with your obtaining testimony in any respect as to the invention in controversy and as to looking up evidence in behalf of the defendant company?

A. Yes, sir; it has somewhat, studying about the hereafter and things of the kind, which led me to forget things that I wouldn't forget if I had been well and in perfect health. It is an evident fact that a man when sick can not think of the things he would when well.

8. I now hand you a copy of the joint patent No. 588,128, which has already been introduced into this case as an exhibit of the defendant and which was issued to C. F. and C. K. Christopher, August 17, 1897, for which the application was filed January 16, 1896, and ask you to state whether you were one of the parties to that patent, what the invention there disclosed was and whether at that time you had conceived the idea of the vertical scale referred to in your answer to my second question.

A. Yes, I had the vertical scale drawing before I made the horizontal scale drawing, but decided to have the horizontal scale
88 patented first as I thought it to be the best scale for counter use, but expected to have the vertical scale patented by and by. Those drawings of both scales, vertical and horizontal, have been made in slight pencil sketches for some time or years before the scales were ever made or patented, about the year 1894.

9. Will you please explain what was the form of mechanism you had in mind or had illustrated in any way in 1894 or subsequently thereto for operating the vertical scale or cylinder and in what respect such mechanism differs from the mechanism shown in the drawings of this patent, 588,128, for operating the horizontal scale?

A. The difference between the vertical and horizontal scale mechanism was that the horizontal scale had a steel wire or a sinure going around a spool fastened to the spring by a downward pull or pushed from the top of the pan would rotate the inner cylinder. The vertical scale had an upright spindle either with bevel cogs or with a half wheel moving horizontally around meshing into a pinion fastened by the upright spindle which rotated the inner casing reading the prices on the outer casing to correspond with the inner lines on the inner cylinder and giving the correct price of the article, by a down pull movement of the pan pulling on a spring rotating the

drum or inner cylinder, which carried the prices, or the amount of the article thereon.

10. Now, when for the first time did you assemble the parts either in a model or in drawing of the vertical scale, upright spindle, etc., as described in your last answer, if at all?

A. In 1894, in drawings.

11. Well, what became of those drawings?

A. In moving to Washington and back to Spartanburg, S. C., we got these drawings misplaced or destroyed, not thinking they would ever be of any value.

12. Now, tell us what was your next step taken and when it was taken after the year 1894, relative to this same matter?

A. In 1896 I commenced a model. I made it up in a rough state of tin and pasteboard and wood and other materials
89 suitable for making a model. I hired Mr. A. Tanner, Mr. George Kinsland, D. N. Curtis, Miss Rosa Kinsman and A. G. Pless to make figures for this scale, in pencil and then traced with red ink. I made a model of the vertical scale the latter part of 1896 and put in my window. I am positive that I had it in my window January, 1897. At the same time, January 16, 1896, I filed patent for horizontal cylinder with outer casing having the prices on it and inner cylinder revolving carrying the value of the article, which was granted to me from the United States Patent Office August 17, 1897. I let the scales, patents and plans lie until the year 1898. I came to Washington and went to work on the models and in the year '99 formed a joint stock company and sold shares to the company, and since that time the company, Computing Scale Company, capitalized in the State of New Jersey, has been making these scales, the vertical scale.

13. In your former testimony you produced certain parts of the scale, which parts were numbered Defendant's exhibits 1, 2, 3 and 4, and I now hand you said exhibits and ask you to state whether these are the same as were referred to in that former testimony.

A. Yes, sir; these are the pieces or parts that were experimented with to see which would be the best on the vertical scale in 1896.

14. You were asked in Question 9, of that former testimony, "Have you any part of this scale constructed in 1897, referred to in your answer to Question 7," and you answered, "I have certain parts here of the scale." Then you proceed to describe the spindle and the other parts as is shown in the exhibits I have just called your attention to. Now, in regard to this date, Mr. Christopher, as to the actual construction of these parts, was that date correct as to each of these several parts or as to parts like them?

A. The date is correct, as to the time having it in the window, but the dates first conceived and the making of these parts was before this time. They were made in 1896 and in '97, January, they were hanging in my window in the first of the year.

90 15. At what place in 1896 as to the house or shop or other place were these separate parts made or produced as referred to in your last answer? And who, if any one, besides yourself, was aware of such production?

A. At the shop, also at the house. My son, C. K. Christopher, assisted in making those parts, from parts of electric gearing that belonged on arc lights and of steam guage fixtures rotating the needle of a steam gauge. Plans of that kind were fixed to rotate the inner cylinder on the vertical scale. It was first experimented with a twist spindle in the shape of an augur bit to rotate the inner cylinder by a down-pull of the spring on the twist of the bit. It was found that that was too much friction and laid it aside and took up the part of a wheel working on a center pivot, with cogs on the outer edge falling in mesh with a small pinion on the upright spindle, which rotated the inner cylinder by a down movement of the weight of the object on the pan, pulling on a string.

Adjourned at 12 o'clock to 2 P. M.
Met pursuant to adjournment at 2 P. M.

16. Mr. Christopher, referring to these parts concerning which you have testified in your last answer, which of the exhibits 1, 2, 3, 4 did you make first.

A. Those things have been numbered since. In making those pieces I made this brass frame, No. 2, first.

17. What changes, if any, have you made in that brass frame?

A. This piece of brass is not the same state that it was when it was first made. It has been changed for another model.

18. Please state what changes have been made therein.

A. The lug that was casted on to the bottom of this has been sawed off, that did fasten to the lower end of the outer casing of the vertical scale and the screws that fastened it on to the casing have been misplaced. On No. 1 the upright spindle has also been changed for other models; the same pinion has been used for the first vertical model. The ends of the spindle have been
91 changed and the pinion put in a different place on the spindle, which throws it out of mesh. The end of the spindle that set in the lower socket has been cut off and threads cut on this for another model. The other end has threads also, which were used for nuts or taps to fasten the revolving cylinder that rotated in the inside of the outer casing. The spring has been removed and misplaced. The pan that pulled downwards is also gone.

19. I would like you to state, Mr. Christopher, the object of these changes you have referred to and about when they were made.

A. The changes on this model were made in 1898, I don't know what day of the year it was, or month. The object of changing them was to fit another model which I was making for this scale, but didn't complete it.

20. Does that other model relate to a computing scale?

A. Yes, sir.

21. Was such other model made for the purpose of an application of a patent?

A. It was intended for that when it started.

22. Was any patent issued on that?

A. No; no patent was ever issued on that.

23. In relation to the Defendant's Exhibit No. 2 consisting of the

spring and the segmental moving rack or lever, please state where the spring that you have alluded to was connected with same, or to what part of said exhibit was the spring connected?

A. The upper end of the spring that I used fastening over the pin, swinging downward a coiled spring fastened to another arm or pin, and the arm extending from the rack bar made on the same hub, which had a pin made in the end of it and the spring catching on to that pin, and the weight of the pan hanging on the same arm in an arch, so as when the article was put on the scale it would pull downward and the said pin had the strength of the spring to carry with the arm of the arch that weighed the article. By the movement of the spring coming apart and weighing the article carried around the moving rack or part of a wheel which has cogs on it, falling in mesh with the pinion on the upright spindle that rotates the inner cylinder.

92 24. In your former testimony you have stated that when you put an article on this apparatus to be weighed the inner cylinder would revolve and bring the price opposite the price per pound on the outer casing and the pounds would register on the revolving cylinder at the top showing the weight. Will you please explain what means were used connected with the outer cylinder which pointed or indicated the particular figures on the inner cylinder, to indicate the result?

A. The outer casing being made perpendicular, that is vertical, having a slot coming down lacking about a half inch wide, coming down right through the metal on the outer casing. And that being laid off in spaces about a quarter of an inch apart and the prices were placed in those squares, just on the edge of the slot, and teeth were cut away pointing in towards the inner cylinder from each price on the outer casing. For instance, at 10 cents a pound opposite the 10 cents was one pound on the scale pan, 10 cents the price of the article, would appear on the inside of the revolving cylinder, and the ounces and pounds appeared at the top on the inside revolving cylinder by a pointer made stationary to the outer casing.

25. I wish, Mr. Christopher, that you would give the history of this Exhibit No. 4 a little more fully than you have heretofore, stating when it was made and how made and the object of the construction.

A. This augur bit I made in 1896, before making the model with the cogs, my first conceivable idea of a vertical scale. By the block moving up and down on the twist of the bit rotated the spindle which had the inner casing revolving cylinder fastened to the top, which rotated the cylinder, but finding that it was too much friction and that the scale couldn't be made accurate and sensitive enough to weigh small articles dispensed with that and took up the cogs.

26. Can you state of what material the weight on this augur bit is composed, where you obtained the same and when and what you did thereto to adapt it to its use with said augur bit.

A. It was set in another frame and the spring was put on either side

of it and as pulling down the follow block on the bit by the
93 pulling down of the article on the spring would then pull the block down and turn the bit with its fixed bearings at each end with the outer casing being fastened to the top of the bit. When the weight of the article was taken off the scale then the strength of the spring which pulled the block back rotated the bit and the drum of the inner cylinder and brought it back to naught. I placed this follow block on this augur bit by putting the bit in the ground, making a hole across the center of the bit and poured the Babbitt metal on it while hot and afterwards took it up and dressed it off. Then put it in the vise and twisted it backwards and forwards until it came to be loose and worked glib.

27. What changes would you make to operate the cylinder when placed horizontally, as shown in your joint patent 588,128, to adapt the same to work vertically, as indicated in your subsequent patents?

A. I made the horizontal casing and an inward moving cylinder working on the same plan of the vertical scale with a spindle through it resting in either end of the outer casing, with a rack on one end of that outer casing and a spring to pull down on it with a sinure or wire, a steel wire something on the order of a violin string, wrapping around the spool or a mandrel, the mandrel having a cog wheel on the end of it falling in mesh with another pinion and two cog wheels at the opposite end which rotated the inner cylinder, either one or two as may be desirable by the pulling down or pushing down of the article on top of the scale pan. That's the way that is operated.

28. Well, how did this mechanism which you have just described in connection with a horizontal casing, compare with the mechanism to work the inner cylinder vertical?

A. At that time there wasn't anything like it at all.

29. What time do you refer to?

A. In 1896; the time I made the model.

30. When did you cease to work or experiment with the horizontal casing of the cylinder?

A. I ceased to work with that after the patent was issued in 1897, August 17.

94 31. Mr. William T. Finch and Mr. William M. Bomar, both of Spartanburg, have testified in this case in your behalf. Now, will you please state when these gentlemen first saw your device or devices, so far as you can recollect?

A. I don't recollect how far back it has been since they have seen it, but I had it there where everybody could see it and the drawings for sometime before the scale was made, as far back as 1894. They could have seen the scale any time I was working on it up to the time I finished it and afterward swinging in my window in my shop.

32. Were they in the habit of visiting that shop or were they familiar with your business, or in what way could they have become acquainted with this scale?

A. Well, in a small little town like Spartanburg, S. C., generally people who are in business and close together on the same street know each other and I had a lot of bicycles and fancy fixtures at

that time and they would call at my place to see these things and a great many people had their work done there, so they became acquainted in that way. I never kept anything secret or hidden with regard to my patents and would talk with people to see what they thought about it. There was nothing to hinder Mr. Finch from seeing the scales finished in the window when they were first finished, because his beef market is just across the street very near opposite my bicycle shop. He could see the scales from his market in my window.

33. How intimately acquainted was Mr. Bomar with you and your place of business and for how long have you known him?

A. I have known Mr. Bomar for quite a number of years in the city there. He had a beef market when I first got acquainted with him. Mr. Bomar is the man I bought the first pair of scales from to tear up to make the vertical scale in 1894; I believe that was the date. Mr. Bomar had a hardware business the second door from me on the same street. It was called Bomar Brothers and Spartanburg Machinery Company. He had all manners of opportunity to see my scale and anybody else that was in the town.

34. What is Mr. Bomar's present business?

95 A. Mr. Bomar, if I understand him, is not doing anything much at all now, but attending to his home affairs and buildings of his own; he has a lot of property of his own, but his brother runs the machinery company just the same.

35. Mr. Christopher, when upon January 16, 1896, you and your son filed joint application for the ready calculator on which patent 588,128 issued, did you not apply for the arrangement of the vertical cylinder instead of the horizontal cylinder, which at that time you had invented and constructed the cylinder in a vertical position as you have testified?

A. I was of the opinion all the time when I filed the application and put in my claims for that horizontal machine that we had made claims for the vertical cylinder; it was either vertical or horizontal, because I had that in my place, and I haven't read the claims since the patent was filed to my knowing and whether the claims cover the vertical part of it as well as the horizontal I am not able to tell without reading the claims.

36. Without reading the claims in that patent, but looking at the device shown in the drawings, please state what, if any, part indicated in those drawings you could have used if the cylinder had been placed in a vertical position. In your answer you may refer to the figures or numerals on said drawings if you desire.

A. I can't tell what parts I could have used by the numbers here without reading the specification and finding the numbers and pointing them out.

37. Well you may do that if it will help you in your answer.

A. I couldn't have used anything about it for the vertical scale except the outer casing and the inner cylinder and then the figures would have been placed vertically. In a horizontal cylinder the figures stand vertical and also a vertical cylinder the figures would

have to stand vertical. I might have used a spring like that, but it would have had to have been longer.

38. Explain more fully how you would have used such a spring with a vertical cylinder.

96 A. Well, the spring is nothing more in a horizontal scale than it would be in a vertical scale; the springs are of the same nature, coil springs; while on the horizontal scale the spring would have to be fitted in a different rack from a vertical scale rotating the spindle horizontally by a down pull of the weight of the article on the pan.

Cross-examination by Mr. CHURCH:

X Q. 39. When did you begin to pull that model of the scale that hung in the window of your shop to pieces to utilize its parts for other purposes? Give the date as near as you can remember.

A. About the year 1898, as well as I remember.

X Q. 40. Have you produced all the parts of that model that you could find and identify?

A. Yes, sir; I have.

X Q. 41. You never made any scale precisely like that model that hung in your shop, did you?

A. Nothing but that one model.

X Q. 42. The fact that you applied for a patent on the scale having the horizontal cylinder seems to indicate rather that you had a preference for that form of scale at the outset. Was that the fact?

A. Yes, sir; I thought it would be the best scale at that time.

X Q. 43. Did you make any of the scales having the horizontal cylinder.

A. I made one model.

X Q. 44. The fact that you took to pieces the model of the scale that hung in your shop window, as you have testified, would seem to indicate that you were not entirely satisfied at that time with that form of scale. Was that not the fact?

A. Yes, sir; I believed it would be a good scale, but I didn't think it would be as good as a counter scale, and I thought I would have the counter scale patented first, as my means were very limited. I aimed to have them patented later on.

97 X Q. 45. But you never did apply for a patent on the form of scale just like that illustrated by the model?

A. I carried the parts of the scale to Mr. Welfley and Mr. Hummer of this city in 1898. I will have to correct that a little; in 1899. We formed a joint stock company with the privilege of having patented any scale model or scale I would get up or have on hand.

X Q. 46. Did you take those gentlemen on that occasion the parts that you have here produced, marked Exhibits Nos. 1, 2, 3, 4.

A. This is the model I still have in my possession. I refer now to Exhibits 1, 2, 3, 4. I came to Washington and I had another frame made in 1899, and that was the frame that I showed to Mr. Welfley and Mr. Hummer. Mr. Dunham had it in his model shop and he says that he has got it misplaced, that he can't find it.

Examination closed.

AUGUST 26, 1903.

Deposition in behalf of the defendant in the above entitled case taken at the office of W. H. Doolittle & Son, Atlantic Building, at 10 o'clock A. M.

Present: Mr. Melville Church, for the Complainant; Mr. W. H. Doolittle, for the Defendant.

GEORGE P. WHITTLESEY.

GEORGE P. WHITTLESEY, a witness called for the defendant in answer to the questions propounded by Mr. Doolittle, testifies as follows:

Q. 1. Please state your name, residence, age and occupation.

A. George P. Whittlesey; age, 47; residence, Washington, D. C.; occupation, patent lawyer and solicitor of patents.

2. Have you ever appeared as a witness in the capacity of mechanical expert in patent causes?

A. I have testified as an expert in a number of patent causes, but in the capacity of a patent expert rather than that of a mechanical expert.

98 3. Will you please state what your education and experience has been that enables you to testify as a patent or mechanical expert?

A. In the Fall of 1879 I entered the United States Patent Office as an Assistant Examiner, and was promoted through several grades until I became a First Assistant Examiner. My term of service in the Patent Office was about six years, and during that time my duties were to read and examine applications for patents and to make searches among the prior patents and publications in order to determine the state of the art relating to the particular invention which formed the subject matter of the application then being examined. It was my duty to consider and weigh the value of the references that were found and to apply them to the claims in the application under consideration. During part of my service in the Patent Office, that is for about two years, I was the Assistant and Acting Examiner of Interferences and for a part of that time I also acted as an Assistant Law Clerk to the Commissioner of Patents. My duties at that time were to read and consider the evidence in interference cases and to prepare the decisions awarding priority of invention to the party entitled thereto.

Since resigning from the Patent Office in the Fall of 1885, I have been in active practice as a patent lawyer and solicitor of patents, my duties being to determine the patentability of alleged new inventions communicated to me by clients; to prepare applications for patents and prosecute the same before the Patent Office; to make searches in order to determine the validity of patents already granted by the Patent Office, and to pass upon questions of infringement and the like. I have also been engaged in a number of patent causes, for the most part as a patent expert.

4. Are you acquainted with and do you understand the patent on which this suit is based, No. 700,919, issued to A. B. Hayden for an improvement in computing scales of the spring balance type, May 27, 1902?

A. I have read this patent and think that I am familiar with it.

5. Will you please state what you regard as the nature of
99 the invention described in said patent and what is embodied in the claims therein?

A. This patent has been very fully and clearly explained by Mr. Browne the Complainant's expert, so that I do not think it is necessary for me to enter into a detailed description of it. It is sufficient to say that the invention relates to a computing scale of the spring-balance type, by which I mean a scale in which the object to be weighed is supported by springs which yield to an amount determined by the weight of the object. This yielding movement is utilized to impart rotary movement to a cylinder mounted upon a vertical axis and provided with a series of figures which are computed to indicate the price of the object or any given weight within the capacity of the scale and at a varying scale of prices ranging in the scale shown in the drawing from 2 to 30 units of price per pound. In order to give a correct reading this rotatable cylinder is enclosed in a stationary cylinder in which there is a longitudinal slot so that as the rotatable cylinder moves the figures thereon are carried beneath such slot and are thus brought into view. At some point on this rotatable cylinder there is a series of figures indicating the weight and the scale is so constructed that the movement of the scale pan when communicated to the inner cylinder causes the proper figure indicating the weight of the object to come into view through the slot. At the same time the column of figures which represents the value of that particular number of pounds at the several units of price per pound inscribed upon the outer cylinder is also visible through the slot.

The object of this construction is to enable a salesman to ascertain the price of the article without the necessity of any mental computation.

The particular means used by the patentee to communicate the yielding movement of the scale pan to the rotatable cylinder consists in a longitudinally movable rod having a screw thread of large pitch engaging with spring pressed rollers secured to one end of the rotatable cylinder. The rod is so mounted that it can not rotate and therefore its longitudinal movement between the rollers causes
100 the same to rotate by reason of the screw thread and thus imparts a rotating movement to the cylinder. I notice in the specification, lines 90 to 96 that this spiral rod which serves by means of its connection with the two cylinders to rotate the computing cylinder "is regarded as the essence of this feature of the invention, however, regardless of the precise details of connection between cylinders and rod." The claims, however are in terms much broader than this. Since Claims 1, 2, 6 and 7 and 8 are not limited to the spirally formed rod, but cover broadly the mechanism for translating the vertical movements of the rod into the rotary

movement of the chart drum, the term chart drum being used to describe the inner rotatable cylinder on which the computations are inscribed.

In brief, then, the patent relates to a spring scale having a vertically mounted rotatable chart drum, a stationary vertical slotted cylinder enclosing the same and a mechanism for translating the vertical movements of the scale-pan supporting-rod into rotary movement of the chart drum.

6. In this said patent of Hayden's 700,919, do you find any statements which admits or implies that computing scales of this type have existed before and that the object of this patent is simply to improve such construction?

A. The only sentence which seems to recognize any prior art of this kind is the second paragraph in the specification, in which it is stated that the object of the invention is "especially to improve the computing capacity of scales of this type."

7. Will you please further look through the specification of said patent, 700,919, and state whether there is any allegation or description of the defects existing in prior computing scales of this type and of the advantages obtained by Mr. Hayden, or sought to be obtained by Mr. Hayden, by his improvements on changes which constitute the subject of this patent?

A. I have carefully read the specification and I do not find therein any statement of defects in prior constructions of the same general type nor is there any statement of the special advantages due to the particular construction adopted by Mr. Hayden. On the
101 second page, lines 15 to 22, he calls attention to the fact that the device comes quickly to rest because the inertia of the rotatable cylinder always acts contrary to the movements of the spiral rod, so that the scale is quickly brought to a standstill and enables the readings to be quickly taken. This, however, is not an advantage arising from the particular construction of this scale. As I understand the art, but is inherent in any scale of this type.

8. Referring to your last answer, do you find Hayden's statement that the device comes quickly to rest because of the fact that the inertia of the Cylinder C acts always contrary to the movements of the rod E and thereby the scale is almost wholly devoid of the series of short vertical movements peculiar to the spring balanced scales, as the subject of any one of the claims of the Hayden patent in controversy?

A. I do not find this particular feature mentioned in any of the claims.

9. Will you please state the extent to which you have investigated the previous state of the art relating to this or any similar type of computing scales?

A. I have examined the patents cited in the answer in this suit and I have also examined the files of the United States Patent Office relating to inventions of this character, both in the United States and foreign patents.

10. I now hand you the copies of the patents heretofore referred to in behalf of the Defendant and in regard to which it has been

stipulated that uncertified copies may be introduced and which are the patents set up in the Defendant's answer, and ask you to state generally what is shown in said patents so far as you regard them containing matter which is pertinent to the claims in the Hayden patent, 700,919, taking up these various patents in the order most convenient to yourself.

A. In order to avoid making too lengthy a record I will take up only a few of the patents cited in the answer, selecting those which seem to me to have a controlling bearing upon the matter in issue.

In the deposition of Mr. Brown, the Complainant's expert, I notice that he has selected Claims 1, 2, 6, 7 and 8 of the Hayden
102 patent as the ones which in his opinion are infringed by the Defendant's scale. I shall therefore confine myself to a discussion of the patents which, in my opinion, have a bearing upon these particular claims.

In reading these claims I notice that in each of them the non-rotatable casing is alleged to be vertical, or words to that effect, and that the rotatable computing cylinder or chart drum is also alleged to be vertical, that is, mounted to rotate about a vertical axis.

Among the patents set up in the answer I do not find any automatic computing scale which precisely meets the terms of these claims. But if we omit from these claims the word vertical or any equivalent thereof, then it is possible to read the claims directly upon several of the patents mentioned in the answer.

The oldest of these patents thus applicable to the claims is that to Phinney, No. 106,869, August 30, 1870, which shows a spring balance computing scale comprising a suitably supported non-rotatable casing provided with a price index, a rotatable computing cylinder journaled in said casing provided with cost computations, a spring supported load bearing and cylinder revolving rod suspended from such casing and connecting means between rod and computing cylinder, whereby by a longitudinal movement of the rod rotary movement is imparted to said cylinder. This description of the Phinney construction is an exact quotation of the substance of Claim 1 of the Hayden patent with the word "vertical" omitted therefrom, the sole difference between Phinney and Hayden so far as this first claim is concerned, being that Hayden's cylinders are vertical, while Phinney's are horizontal.

The second claim of the Hayden patent can also be read exactly upon the Phinney construction by omitting the word "vertical" in lines 2 and 4 of said claim. The same is true of Claims 6, 7 and 8, since the only difference between the constructions set up in said claims and the construction of the Phinney patent is the arrangement of the cylinders on a vertical axis instead of an horizontal axis.

The prior art contains at least two other patents concerning
103 which the same statements can be made as have been made above in regard to the Phinney patent. These patents are 421,805, to Babcock, February 18, 1890; and 545,616 to Smith, September 3, 1895. Both these patents show spring scales having vertically movable load supporting rods attached to the spring, stationary cylinders or the equivalent thereof, provided with price

marks and a longitudinal sight opening, and rotatable chart drums operatively connected to the vertically movable load supporting rod. The stationary and rotatable cylinders in these patents revolve on horizontal axes instead of on vertical axes, and this is the sole difference between these patents and the claims 1, 2, 6, 7 and 8 of the said patent.

The prior art, as shown in the patents cited in the answer, also discloses the fact that it is not a new idea with Hayden to arrange a chart drum to rotate on a vertical axis. This had been done long before, as is shown, for instance, in the patent to Beckwith, No. 12,249, January 16, 1855. This patent shows a spring scale having a vertically movable load supporting rod. Concentric with this rod is a freely rotatable sheet metal cylinder carrying price computations and weight indicating figures. On the load-supporting rod is an index coöperating with such cylinder. When the rod moves downward under the weight of the article the index comes to rest in the horizontal plane of the proper weight indicating figure and the cylinder can then be rotated by hand until the proper figure representing the price per pound is in vertical alignment with the index which will then register with the figures indicating the total price of the article being weighed.

A somewhat similar device is shown in the patent to Freeman, 431,456, July 1, 1890. In this case the rotatable cylinder carrying the computations is mounted to move vertically also and serves as a support for the article being weighed, being attached to the lower end of the spring. When this cylinder has been depressed to a certain extent by an article laid upon it, it can then be rotated in order to bring the figure indicating the price per pound in vertical alignment with an opening in the stationary outer cylinder, whereupon the figures representing the total price of the article can be read through said opening.

104 At the time that Mr. Hayden filed his application there was, therefore, nothing new in the idea of arranging a rotatable price cylinder upon a vertical axis. The sole difference between the prior patents in this respect and Mr. Hayden's device lies, therefore, in the fact that Mr. Hayden has made the device automatic by connecting the load supporting rod with the price cylinder or chart drum, so that the latter will be automatically brought to the proper position, when an article to be weighed is attached to the rod. But this automatic construction was old, at the time that Hayden filed his application, in scales provided with horizontal cylinders instead of vertical cylinders. Mr. Hayden has therefore adopted in the old non-automatic vertical cylinder scale the idea of automatic operation, also old in the horizontal cylinder scales. Apparently this is all that the claims of this patent cover, excepting those which relate to the specific means by which he connects his load-supporting rod with his chart drum. And these claims are not the ones which the Complainant's expert has selected as covering Defendant's scale.

Mr. Hayden's patent does not contain a syllable of statement in regard to the especial advantages, if there are any, which result from the construction which he has adopted. There is no state-

ment of disadvantages inherent in the automatic horizontal cylinder scales or any statement of peculiar advantages to be derived from the vertical cylinder arrangement nor any statement why the vertical cylinder automatic scale possesses any more advantages over the vertical cylinder non-automatic scale, than are possessed by the horizontal cylinder automatic scale over the vertical cylinder non-automatic scale. In other words, there is no foundation in his specification for asserting any peculiar advantages to be derived from his vertical construction, and in view of the state of the art as set forth it is difficult to understand wherein the patentable novelty exists in his claims 1, 2, 6, 7 and 8.

At 12 o'clock noon, recess taken until 2 P. M.
Met pursuant to adjournment at 2 P. M.

105 11. In view of your last two answers and I believe I am correct in inferring that you have read the deposition of Mr. Arthur S. Brown, the expert witness in behalf of the Complainant, will you please consult Mr. Brown's deposition and state what the declarations of Mr. Brown are, if any, which lead you to conclude, if that is your conclusion, that Mr. Brown construed the claims in the Hayden patent broadly and as not restricted to the particular features and arrangements specifically shown and enumerated in the Hayden drawings?

A. The claims which Mr. Brown has quoted in his deposition are those which do not confine themselves to any specific devices for connecting the load supporting rod with the chart drum. It is evident that the specific means used by the defendant and described in his answer to Question 4 is not the same as that shown in the Hayden patent and it is therefore evident that Mr. Brown considers that the claims which he has quoted, namely, 1, 2, 6, 7 and 8, are not limited to the specific mechanism shown and described by Hayden, but are broad enough to include the mechanically different mechanism used by Defendant. In fact, Mr. Brown says, "It will be noted that this language is broad in its scope and does not call for any specific connecting means between the rod and the computing cylinder." He uses this language in relation to Claim 1 and says that these statements apply also to Claim 2. He also says in relation to Claims 6, 7 and 8 that "the language of these claims applies literally and aptly to the Defendant's scale and describes the Defendant's scale just as well as the scale of Complainant's patent."

12. Will you please state, if you recall the fact, wherein and in what particulars the particular construction shown in the Hayden drawings and enumerated therein by certain characters of reference, differ from specific features shown in Defendant's device?

A. In the Hayden patent, as already stated by me, the load-supporting rod has a screw thread which engages with rollers secured to the lower end of the rotating cylinder and inasmuch as this rod is not rotatable its longitudinal movements between the roller causes them to revolve around the axis of the rod as they follow the turns of the thread, thereby rotating the cylinder to which they are attached.

106 In the Defendant's scale the load-carrying bar has a rod which is extended upward at one side of the point at which the load-carrying hook is arranged and this rod carries a rack which meshes with a pinion on a short horizontal shaft journaled in suitable bearings on a cross-bar of the frame of the machine. On this shaft is a bevel gear which meshes with a bevel pinion secured to an upright shaft journaled in bearings in the frame and projecting above the same in order to receive a light frame composed of cross-arms and a circular rim to which is secured the depending chart drum. The downward movement of the load-supporting hook causes a consequent downward movement of the rack which rotates the short horizontal shaft by means of the pinion and this rotary movement is communicated by beveled gears to the upright shaft carrying the chart drum.

There is thus a marked difference in the specific mechanism of the two scales by means of which the downward movement of the load is translated into rotary movement of the cylinder.

It may be noted that there is another difference in construction between the Hayden patent and the Defendant's scale in that the cross-head which connects the lower end of the two springs is arranged in the Hayden patent above the bottom of the rotating cylinder, so that the load-supporting rod which connects the scale-pan with said cross-head passes through the bottom of both cylinders and exerts its torsional effect upon the rotatable cylinder at a point between the scale-pan and said cross-head. In the Defendant's scale this cross-head is arranged underneath the bottom of the cylinders and outside of the same and the turning effect is not produced by any part which connects this cross-head with the scale-pan, but on the contrary it is effected by an independent rod rising from the cross-head into the cylinders and carrying the rack which I have mentioned above. In one sense, therefore, the rotation of the cylinder is not effected by the load-carrying rod since there is no element in Defendant's scale which may be said, strictly speaking, to correspond with the load-carrying rod E of the Hayden patent. It is therefore questionable whether a strict construction of Claims
107 1 and 2 of the Hayden patent would permit them to read upon the Defendant's scale.

Counsel for Defendant states that the copy of the Beckwith patent referred to by witness is an uncertified copy written in pencil obtained from the records of the Patent Office as well as the drawings of the same, but that an official copy of that patent will be furnished during the course of the examination of this witness and before the completion of his cross-examination.

It is also stated that the direct examination of this witness is now closed, subject to his production for cross-examination at a time that may be agreed upon by counsel.

108 In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

It is hereby agreed that uncertified copies of the following U. S. Patents, the same being the ones set up in the answer of defendant in this case, to the bill of complaint, may this day be introduced and filed in the case by the defendant company, subject to any objection to their admittance by complainant which objection if made may be hereafter at any time entered of record.

E. P. Beckwith, 12249.....Jan. 16, 1855.
S. R. P. Camp, 103977.....June 7, 1870.
W. H. Phinney, 103869.....Aug. 30, 1870.
C. Pfanne, 216450.....June 10, 1879.
A. Turnbull, 378382.....Feb. 21, 1888.
C. M. Babcock, 421805.....Feb. 18, 1890.
Beckett & Roberts, 527828.....Oct. 23, 1894.
J. H. Freeman, Jr., 431456.....July 1, 1890.
J. H. Swihart, 539599.....May 21, 1895.
A. U. Smith, 545616.....Sept. 3, 1895.
H. E. Swift, 579550.....Mar. 23, 1897.
J. E. Duncan, 597607.....Jan. 18, 1898.

W. H. DOOLITTLE & SON,
Attorneys for Defendant.

——— ———,
Attorneys for Complainant.

JULY 15, 1903.

Defendant's counsel herewith offers and introduces in evidence uncertified copies of the following names patents in pursuance
109 with a stipulation of counsel for the respective parties herewith filed:

E. P. Beckwith, 12249.....Jan. 16, 1855.
S. R. P. Camp, 103977.....June 7, 1870.
W. H. Phinney, 106869.....Aug. 30, 1870.
C. Pfanne, 216450.....June 10, 1879.
A. Turnbull, 378382.....Feb. 21, 1888.
C. M. Babcock, 421805.....Feb. 18, 1890.
Beckett & Roberts, 527828.....Oct. 23, 1894.
J. H. Freeman, Jr., 431456.....July 1, 1890.
J. H. Swihart, 539599.....May 21, 1895.
A. U. Smith, 545616.....Sept. 3, 1895.
H. E. Swif., 579550.....Mar. 23, 1897.
J. E. Duncan, 597607.....Jan. 18, 1898.

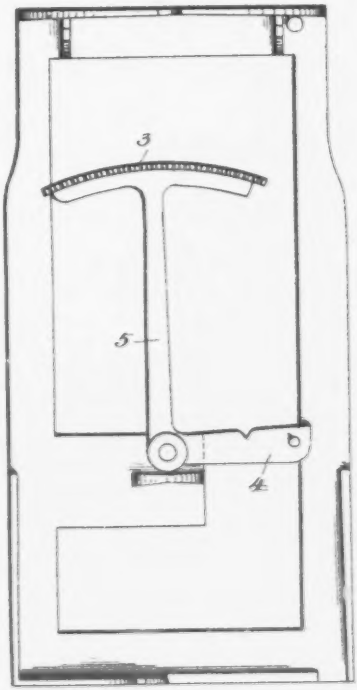
No. 175.

Comp. Scale Co. v Au Scale C O

#111

DEFENDANTS EXHIBIT № 1.

DEFENDANTS EXHIBIT № 2



No. 175.

Comp. Scale Co. v Aut-Scale Co 6/12

DEFENDANTS EXHIBIT No 4.

DEFENDANTS EXHIBIT No 3.

110

Notary's Certificate.

DISTRICT OF COLUMBIA, *County of Washington:*

I, Jos. H. Blackwood, a Notary Public in and for the District of Columbia, duly commissioned and qualified, do hereby certify that the foregoing depositions of Colonel K. Christopher and A. G. Pless were taken before me pursuant to the annexed notice on the 13th, 14th, 17th and 23d days of July, 1903, at the office of William H. Doolittle & Son, Atlantic Bldg., 928 F St., Washington, D. C.; Wm. H. Doolittle, Esq., appearing for the Defendant and Alexander S. Stewart, Esq., for the Complainants, and the testimony of William T. Finch and W. M. Bomar on the 22d day of July, 1903, at the office of Jos. H. Blackwood, Notary Public, Atlantic Bldg., Washington, D. C., was taken down on the typewriter by Leon A. Clark, in my presence and in the presence of the witnesses. Present: Mr. Melville Church on behalf of Complainants and Mr. Wm. H. Doolittle on behalf of Defendant, the said witnesses being of sound mind and lawful age, and having been by me carefully examined and sworn to testify the truth, the whole truth, and nothing but the truth; that the said depositions by consent of counsel for the respective parties were taken down on the typewriter by Mrs. N. T. McKnew, in my presence and in the presence of the witnesses, and signed by the witnesses in my presence.

I further certify that I am not of counsel for either of the parties in this cause or interested in the same.

In testimony whereof, I have hereunto set my hand and affixed my official seal this 4th day of April, A. D., 1904.

[SEAL.] (Signed) JOS. H. BLACKWOOD,
Notary Public, Dist. of Columbia.

(Here follow diagrams marked pp. 111 & 112.)

115 UNITED STATES PATENT OFFICE.

AUSTIN B. HAYDEN, of Chicago, Illinois, Assignor to Computing Scale Company of America, a Corporation of New Jersey.

Computing-Scale.

Specification Forming Part of Letters Patent No. 700,919, Dated May 27, 1902.

Application Filed September 8, 1899. Serial No. 729,876. (No. Model.)

To all whom it may concern:

Be it known that I, Austin B. Hayden, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Computing-Scales, of which the following is a specification.

My invention relates particularly to an improvement in computing-scales of the spring-balance type, my object being especially to increase the computing capacity of scales of this type.

(Here follow diagrams marked pp. 113 & 114.)

In the accompanying drawings, illustrating my invention, Figure 1 is a view in front elevation of a spring-balance computing-scale embodying my improvements in preferred form; Fig. 2, an enlarged broken view of the computing-cylinder and its casing; Fig. 3, a broken vertical sectional view of the same, and Fig. 4 a horizontal section at line 4 of Fig. 3.

A represents a standard, which may be of a variety of forms; B, a vertically-disposed non-rotatable cylindrical casing supported from said standard through the medium of lugs *h;* C, a vertical computing-cylinder journaled in the casing B; D, a load-hanger comprising an upper cross-piece *a,* provided with a threaded stem a', which projects upward through the casing-top and is supplied with nuts a^2 a^3 and is provided also with perforated enlargements a^4, serving to receive downward-projecting guide-pins a^5, spring-coils a^6, and a lower cross-piece a^7; E, a combined load-supporting and cylinder-actuating rod, and F a load-pan or suspended weighing-platform.

The casing-cylinder B is provided with a vertical slot *b,* along one margin of which is a price-index indicating cents per pound. The price-index preferably is numbered from bottom to top, the prices shown ranging from two cents to thirty cents. A fine hair wire b' divides the slot longitudinally for convenience in reading.

The computing-cylinder, which revolves as the rod E is drawn downward, is provided with circumferential columns, the lower one of which preferably is graduated to pounds and ounces, the pound-

No. 175.

Comp. Scale Co. v Aut-Scale Co

p. 113

No. 700,919. Patented May 27, 1902.

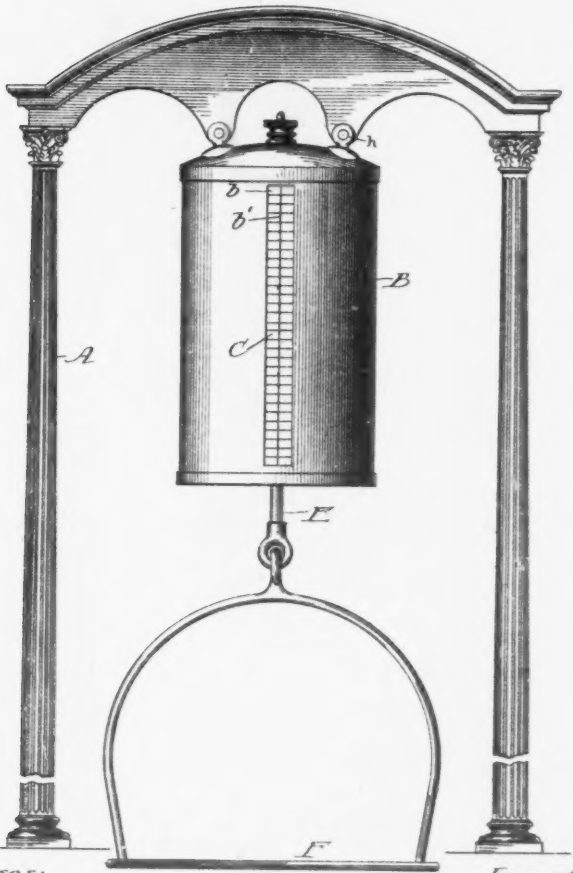
A. B. HAYDEN.

COMPUTING SCALE.

(Application filed Sept. 6, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses:

Frank D. Blanchard

Richard D. Spencer

Inventor:

Austin B. Hayden

By Attorneys

Dyrenforth & Dyrenforth

No. 175.

Comp. Scale Co. v Aut-Scale Co } p. 114

No. 700,919. Patented May 27, 1902.

A. B. HAYDEN.

COMPUTING SCALE.

(Application filed Sept. 8, 1898.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

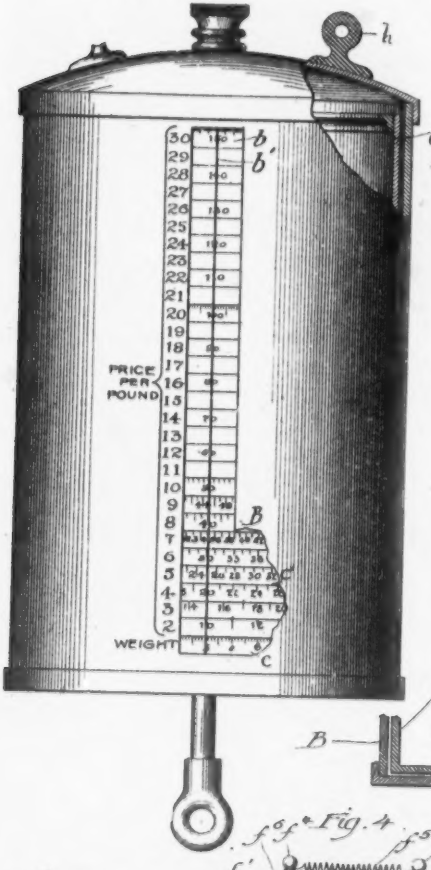


Fig. 3.

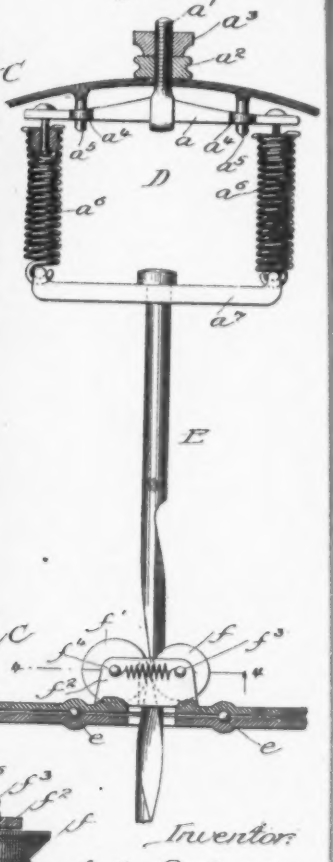
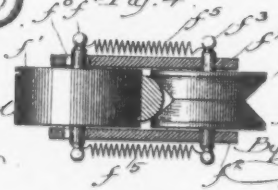


Fig. 4.



Witnesses:
Frank D. Blanchard
Richard J. Spencer

Inventor:
Austin B. Hayden
By Attorneys
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lines being indicated by numbers. Above the weight-index appear the computations, each computation being set above its appropriate weight-index and opposite its appropriate price-index number. Thus above the weight-index number "5," Fig. 2, and opposite the price-index number "4" occurs the computation "20," which is the cost of five pounds at four cents per pound.

For economy of space certain computations only of each horizontal circumferential column are written out. The spaces between the written numbers of each column are graduated to pennies, so that the exact cost for any given weight may be readily computed. Thus in Fig. 2 directly above the mark *c*, indicating five pounds four ounces, and opposite the price-index number "4" occurs the penny graduation *c'*, indicating that one cent is to be added to twenty cents to give the cost of five pounds four ounces.

The cylinder C is supported at its base on ball-bearings, which move in a horizontal circular channel on the inner surface of the bottom of the cylinder B. The rod E is provided with a spiral groove of very high pitch, which moves between rollers *f* and *f'*, journaled in lugs f^2, centrally located on the inner surface of the bottom of the cylinder C. The shafts f^3 f^4 of the rollers are connected by springs f^5, and the lugs are provided with slots f^6 to permit yielding.

In the construction shown the spiral of the rod E has such a direction as to cause the cylinder C to rotate to the front and left. Fig. 2 shows the position after the cylinder has rotated from the zero-point to the number "5" of the pound-index.

It will be noted that in the construction shown the rod E is non-rotatable, and this is the preferred construction. The spiral rod passing through the lower ends of the casing and serving, by means of its connection with the two cylinders, to rotate the computing-cylinder is regarded as the essence of this feature of the invention, however, regardless of the precise details of connection between cylinders and rod. The spiral of the rod E may be regarded as a motion-translating member, and the antifriction-rollers *f f'*, engaging said spiral, may be regarded as an antifriction member coacting with said spiral. It is necessary that one of said motion-
116 translating members be supported by the spring of the scale to have a simple vertical movement and that the other motion-translating member shall be connected directly to the computing-cylinder to impart rotary motion thereto. Thus one of said motion-translating members moves with the computing-cylinder about a vertical axis, while the other acts as a spring-supported runner which engages the cylinder carried or connected member and has its own vertical movement translated into a rotary movement.

When a weight is thrown upon the pan F, the rod E is drawn sharply down, causing the cylinder C to revolve. The device comes quickly to rest, however, because of the fact that the inertia of the cylinder C acts always contrary to the movements of the rod E. Thus, the scale is almost wholly devoid of the series of short ver-

tical movements peculiar to spring-balance scales, enabling a quick reading to be taken.

Changes in details of construction within the spirit of my invention may be made. Hence no limitation is to be understood by the precise description given above, except as may appear from the appended claims.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod suspended from said casing, and connecting means between rod and computing-cylinder, whereby by longitudinal movement of the rod rotary movement is imparted to said cylinder, substantially as and for the purpose set forth.

2. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod non-rotatably suspended from said casing, and connecting means between said rod and computing-cylinder, whereby longitudinal movement of the rod produces rotary movement of the cylinder, substantially as and for the purpose set forth.

3. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod non-rotatably suspended from said casing, said rod being provided with a spiral, and rollers journaled in said cylinder and engaging said spiral, whereby longitudinal movement of the rod turns the cylinder, substantially as and for the purpose set forth.

4. In a spring-balance scale, a suitably-supported non-rotatable casing provided with a vertical slot, a price-index on a margin of said slot, a vertical computing-cylinder journaled in said casing, ball-bearings between the bottom of said cylinder and the bottom of said casing, a load-supporting rod passing through central perforations in the bottoms of said casing and cylinder, and provided with a spiral, spring connection between said rod and the top of said casing, and rollers journaled on the inner surface of the bottom of said cylinder and contacting with said spiral, whereby longitudinal movement of the rod produces rotary movement of the spiral, substantially as and for the purpose set forth.

5. In a spring-balance scale, a suitably-supported non-rotatable casing provided with a vertical slot, a price-index on a margin of said slot, a vertical computing-cylinder journaled in said casing, a load-supporting rod extending within said cylinder, a spring load-hanger D provided with a non-rotatable top cross-piece a having a threaded stem a' equipped with nuts and provided also with means

for preventing rotation, said hanger D having spring connection with said rod, and connections between rod and cylinder, whereby the rod in moving longitudinally turns the cylinder, substantially as and for the purpose set forth.

6. In a spring-balance, the combination of a non-rotating frame providing an external casing and having means for supporting it from above, weighing-springs secured at their upper ends to rigid parts of said frame, a vertically-movable runner which is suspended from the lower ends of said springs and is provided with depending means to support the load, a chart-drum rotatably mounted within said casing on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said casing having a sight-opening through which portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer face of said frame adjacent to the value-indicating rows on the chart-drum, and mechanism for translating the vertical movement of the runner into the rotary movements of the chart-drum.

7. In a spring-balance, the combination of an external non-rotating frame adapted to be supported from above, weighing-springs secured at their upper ends to rigid parts of said frame, a vertically-movable runner which is suspended from the lower ends of said springs and is provided at its lower end with means to support the load beneath it, a chart-drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said external frame being apertured whereby portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer
117 face of said frame adjacent to the value-indicating rows on the chart-drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart-drum, substantially as specified.

8. In a spring-balance, the combination of an external non-rotating frame, weighing-springs supported from said frame, a vertically-movable runner which is suspended from said springs and is provided at its lower end with means to support the load beneath it, a chart-drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said external frame being provided with a vertical aperture, whereby portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer surface of said frame adjacent to said aperture and corresponding with said value-indicating rows on the chart-drum, and mechanism for translating the vertical movements of the runner into the rotary movement of the chart-drum.

9. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing and provided with circumferential rows of cost computations, a central vertical spiral-equipped motion-translating rod, a

spring supported from the casing, a motion-translating antifriction member engaging said spiral, one of said motion-translating devices being supported by said spring to move vertically and the other connected with said cylinder to transmit rotary motion to said cylinder, and a load-pan supported from said spring-supported motion-translating member, substantially as and for the purpose set forth.

10. In a price-scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, and a screw connection intermediate said rod and the rotatable cylinder.

11. In a price-scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, said rod being provided with a screw-thread throughout a portion of its length, and rollers carried by the rotatable cylinder and bearing directly upon said screw-threaded portion of the rod.

AUSTIN B. HAYDEN.

In presence of—
EDWARD H. AMENDT.
D. W. LEE.

No. 175.

Comp. Scale Co. v Aut-Seale Co } p. 118

E. P. BECKWITH.

SPRING BALANCE.

No. 12,249. Patented Jan. 16, 1855.

Fig 1.

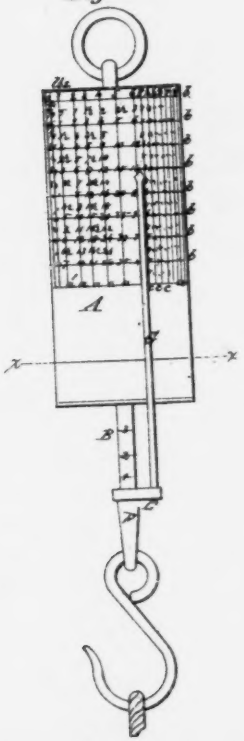
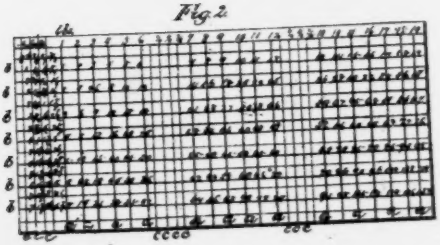


Fig 3

Fig 2.



119 ELISHA P. BECKWITH, of New London, Connecticut.

Letters Patent No. 12,249, Dated January 16, 1855.

The Schedule Referred to in These Letters Patent and Making Part of the Same.

To all whom it may concern:

Be it known that I, Elisha P. Beckwith, of New London, in the County of New London, and State of Connecticut, have invented a new and useful Improvement in Spring Balances; and I do hereby declare that the following is a full, clear and exact description of the same, references being had to the annexed drawings making a part of this specification in which:

(Here follows diagram marked p. 118.)

Fig. 1 is an external view of my improved Spring Balance.

Fig. 2 is a view of the sheet of metal plate of which the cylinder is formed.

Fig. 3 is a horizontal section of the Balance taken at the line (*x*), Fig. 1.

Similar letters of references indicate corresponding parts in the several figures.

The nature of my invention consists in surrounding the Spring Balance with cylinder formed of sheet metal, or other proper material, and having its periphery graduated as will be hereafter shown, so that not only the weight of the article is determined, but also its cost at a given price per pound.

To enable others skilled in the art to fully understand and construct my invention I will proceed to describe it:

A represents a cylinder constructed of sheet metal, or other proper material. This cylinder encompasses a Spring Balance which may be of the ordinary construction except that the usual index is not required, the rod B around which the spiral spring is placed being graduated as shown in Fig. 1 whereby the weight of the article may be determined.

The spiral spring around the rod B is shown in Fig. 3 and is designated by C and the usual casing D around the spring and rod is also shown.

The cylinder A is attached to the casing D in any proper manner and its periphery is divided into a number of equal parts by vertical lines (*a*) and also has a series of lines (*b*) made around its periphery concentric with its upper and lower ends, the latter lines being on a level with the division of pounds (lbs.) which are on the vertical line (*a'*), see Figs. 1 & 2, the line (*a'*) being graduated to coincide with the rod B.

If the cylinder is constructed of sheet metal the divisions or lines may be made before the cylinder is formed as shown in Fig. 2.

The lower end of the Rod B is provided with the usual hook or basin, and has also an arm E upon it, said arm being loose on the rod and directly above a shoulder F at the lower end of the rod, see Fig. 1. The arm E projects horizontally from the rod B a short distance beyond the lower edge of the cylinder, and has a vertical index rod G secured to it which is about as long as the cylinder. All the vertical lines (*a*) are numbered from 1 upwards, the figures denoting the rate or price per pound of articles weighed and the lines (*b*) at their points of intersection with the lines (*a*) are numbered denoting the aggregate cost of the number of pounds: for instance, suppose an article weighs three pounds the figure 3 or its division on the rod B will be even with the lower edge of the cylinder A, and the top of the index G will be on a line with the third line (*b*) from the top of the cylinder and if the price of this article be 6 cts. per pound the index is turned to coincide with the vertical line (*a*) number 6 and the top of the index will cover the point of intersection of the lines (*a*) (*b*) numbered 18 which is the whole or aggregate cost of the article.

The cylinder has also several vertical lines (*c*) upon it for fractions, see red lines Figs. 1 & 2, so that if the price per pound is composed of a whole number and a fraction the sum of the fractions may be added without difficulty, the sum of the whole numbers and the fractions being determined separately and then added.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

The employment or use of the cylinder A surrounding the Spring Balance and divided into parts or graduated substantially as herein shown, so that by the aid of the index rod G, or its equivalent, not only the weight but also the whole or aggregate cost of any article may be determined at a given price per pound.

ELISHA P. BECKWITH.

Witnesses:
JOHN P. SPICER,
BUTLER D. STAYNER.

No. 175.

Comp. Scale Co. v Aut-Scale CO } p. 120

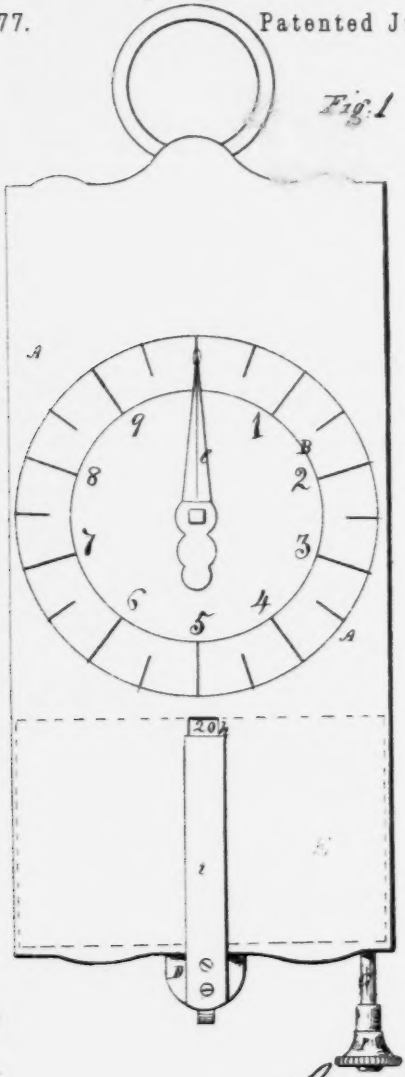
3 Sheets—Sheet 1.

S. R. P. CAMP

Spring Scales.

No. 103.977. Patented June 7, 1870.

Fig. 1



Witnesses
S. N. Wood
Emmy Spelle.

Inventor S. R. P. Camp
744 Broadway
NY

No. 175.

Comp. Scale Co. v Aut-Scale Co

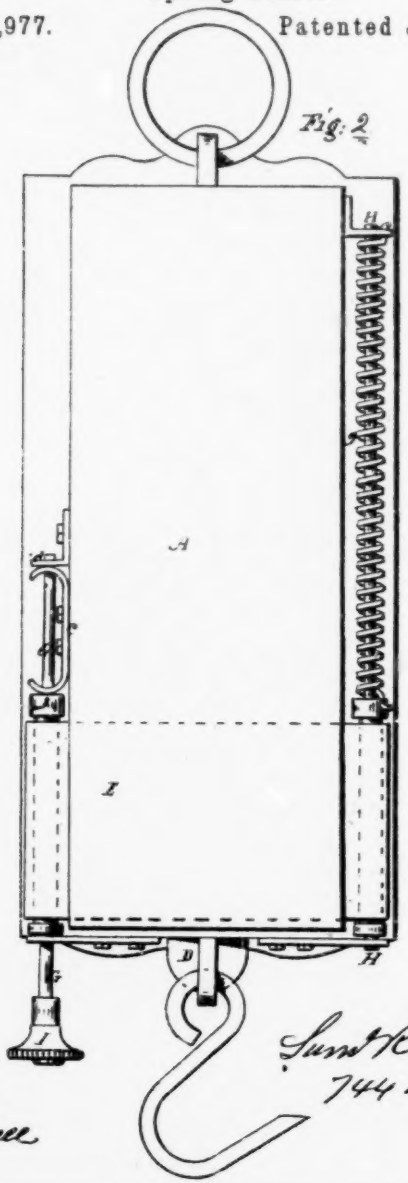
3 Sheets—Sheet 2

S. R. P. CAMP.

Spring Scales.

No. 103,977. Patented June 7, 1870.

Fig. 2



Witnesses
S. W. Wood
Com. Spicer

Saml R. P. Camp
744 Broadway
N.Y.

No. 175.

Comp. Scale Co. v Aut-Scale Co } No. 122

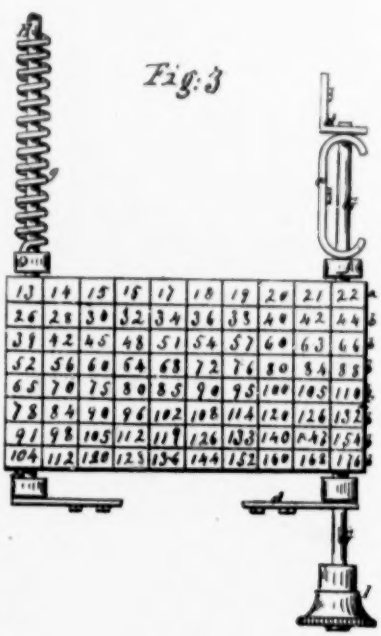
3 Sheets—Sheet 3.

S. R. P. CAMP.

Spring Scales.

No. 103,977. Patented June 7, 1870.

Fig. 3



Witnesses
S. W. Wood
C. M. Spell

Sam'l R. P. Camp

123 UNITED STATES PATENT OFFICE.

SAMUEL R. P. CAMP, of New York, N. Y.

Letters Patent No. 103,977, Dated June 7, 1870.

Improvement in Computing Spring-Balances.

The Schedule Referred to in these Letters Patent and Making Part of the Same.

To all whom it may concern:

Be it known that I, Samuel R. P. Camp, of the city, county, and State of New York, have invented an Improvement in Weighing and Computing Balances or Scales; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this specification—

(Here follow diagrams marked pp. 120, 121 & 122.)

Figure 1 being a front view of a spring-balance provided with my improvement.

Figure 2, a rear view of the same.

Figure 3, a view of the part which embodies my improvement, detached.

Like letters designate corresponding parts in all of the figures.

The nature of my invention consists in the combination, with a weighing-balance or scales, of an apron or flexible tablet, provided with a series of numbers indicating the price per pound, and with corresponding series of numbers showing the value of the articles for the number of pounds in weight designated by the balance, the said apron or flexible tablet having a reciprocating movement across the balance, and suitable mechanism for adjusting its position and retaining it as adjusted, substantially as herein specified.

Let A represent the case of a spring-balance, with a scale, B, of pounds, index C, and suspension bar or slide, D, all of which may be of ordinary construction.

In the lower part of the case A is located the apron or flexible tablet E, having sufficient length extending horizontally across the case to exhibit the series *a*, fig. 3, of pieces, equal in number to the number of pounds which the balance is capable of weighing, and sufficient breadth extending downward to contain as many series, *b b*, of multiples or computing numbers as may be convenient or desirable.

This apron or flexible tablet has its two ends secured respectively to, so as to wind alternately on, enlarged portions or cylinders of two vertical shafts, G H, mounted in the balance-case, behind the front plate thereof.

One shaft, G, extends downward below the balance-case, and terminates in a knob or milled head, I, by which the apron is wound or

unwound on the shaft with the hand of the attendant. It has a spring brake, *c*, passing between its upper bearer, *d*, and a rubber or disk, *f*, on the shaft, for holding the apron in any position to which it may be adjusted on the shaft. Any equivalent brake or detent may be used.

The shaft H, on which the other end of the apron winds, is provided with a torsional-spring, *g*, arranged so as to automatically wind the apron E upon the shaft as fast as it is unwound from the other shaft G, and thereby take up the slack of the apron, and keep it stretched at all times. Its strength is quite slight, just sufficient to effect the purpose intended, so that it will readily yield when the apron is wound upon the other shaft.

Thus constructed and arranged to operate, this apron or flexible tablet is connected with the movements of the balance by means of a slot, *h*, in the front plate of the balance-case A, extending vertically across the width of the apron, and wide enough to exhibit a single number of either of the series *a b b*, and of an index-plate, *i*, attached to the suspension slide D of the balance, and extending upward in front of the case A, so as to cover the said slot, except a part of the upper end, sufficient to show the number of the price series, *a*, on the apron, when the balance is empty, and the index C is at zero, as shown in fig. 1. Then, as the article to be weighed draws down the suspension bar D, bringing with it the slide-plate *i*, so as to uncover a series, *b*, on the apron E, corresponding with the number of pounds indicated by the balance-index, the full value of the article at the price designated in the upper series *a*, is exhibited through the slot *h*, immediately over the slide plate *i*. The apron is adjusted by turning the knob I, to show the price through the slot, either before or at the time of weighing.

The value of this device lies in this, that, while it adds greatly to the utility of the balance by facilitating the work of weighing and computing the prices of articles, it adds nothing to the size of the balance, and little to the weight and cost thereof, and it does not interfere in the least with its ordinary use. It is very simple, and is easily understood and employed.

What I claim as my invention, and desire to secure by Letters Patent, is—

The reciprocating apron or flexible tablet E, provided with price and computing scales, and the winding shafts G H, provided respectively with a brake and winding spring, all arranged in combination with the spring-balance or scale, substantially as and for the purpose herein specified.

SAML. R. P. CAMP.

Witnesses:
S. W. WOOD.
C. M. BISSELL.

No. 175.

Comp. Scale Co. v Aut-Scale Co. } p. 124

W. H. PHINNEY.

SCALE FOR SHOWING WEIGHT AND PRICE.

No. 106,869. Patented Aug. 30, 1870.

Fig. 1

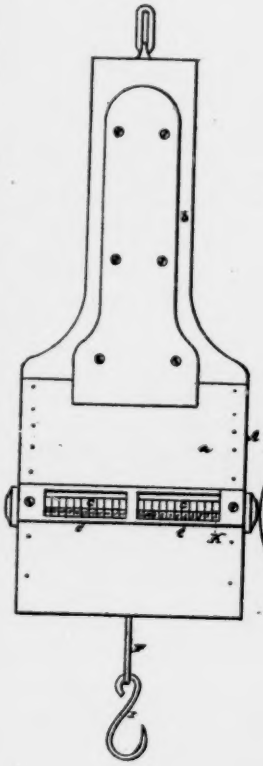


Fig. 2

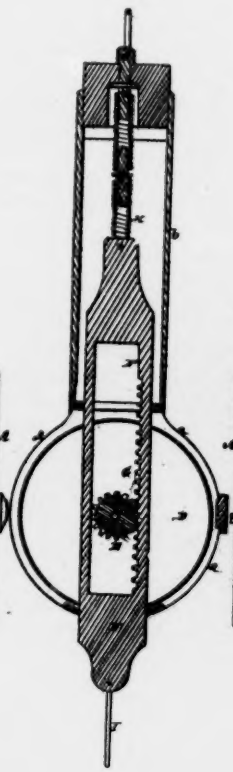


Fig. 3

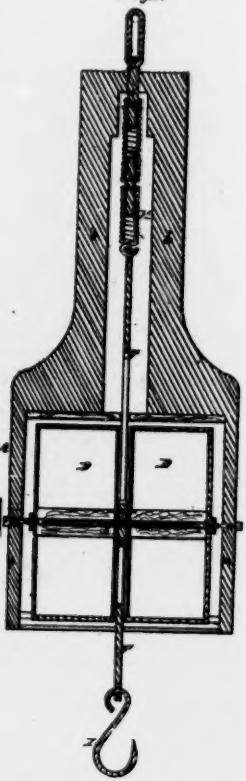
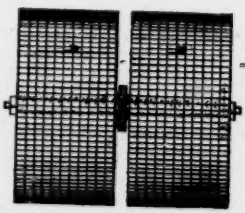


Fig. 4



Witnesses.

L. N. Piper

J. R. Snow

William H. Phinney

By Jno. Wheatman.

N. Hall

125

UNITED STATES PATENT OFFICE.

WILLIAM H. PHINNEY, of Pawtucket, Rhode Island.

Letters Patent No. 106,869, Dated August 30, 1870.

Improvement in Scales for Showing Weight and Price.

The Schedule Referred to in These Letters Patent and Making Part of the Same.

To all persons to whom these presents may come:

Be it known that I, William H. Phinney, of Pawtucket, of the county of Providence and State of Rhode Island, have invented a new and useful Apparatus for Determining the Weight and Value of Articles; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawing, of which—

(Here follows diagram marked p. 124.)

Figure 1 is a front elevation;
Figure 2, a transverse section; and
Figure 3, a longitudinal section of such apparatus.
Figure 4 is a front elevation of the valuation cylinder separated from the case of the apparatus.

In such drawing—

A denotes the said case as composed of a drum, *a*, and a hollow or chambered arm, *b*, extending upward from and opening into such drum.

There are one or more slots, *c c*, made through the front of the drum, and formed trapezoidal, in transverse section, there being a scale, C, on the lower side of each slot.

This scale is divided into equal parts, each having a designated number upon it, as represented.

Within the drum there are arranged two cylinders, D D, whose lengths correspond very nearly, if not exactly, with those of the two slots.

They are disposed opposite the slots, and have a gear or toothed pinion, E, disposed between them, and fixed to them or their common axis or shaft.

A slotted bar, F, applied to the case, so as to be capable of moving vertically therein and out of the bottom of the drum, has a rack or series, G, of teeth, to engage with the said pinion.

The bar F depends from a helical spring, H, arranged within the case and suspended from its upper part, in manner as represented.

A hook, I, applied to the lower part of the slotted and toothed bar

F, serves to enable an article to be weighed and valued to be connected with the bar.

The two cylinders are divided lengthwise on their peripheries by a series of lines, extending around them, and being at equal distances apart, they being in number corresponding to the divisions of the weight scale.

The said cylinders are also otherwise divided, viz., by a series of straight lines crossing the circles or divisions before mentioned, and arranged parallel to one another, and at or about at equal distances apart.

We will suppose that the parallel straight lines mark the arcs of revolution of the cylinders, caused by different weights being upon the hook I, that is, we will suppose that every additional quarter of a pound applied to the hook shall cause the cylinders or barrels to revolve one of their arcs of divisions, therefore we should number the said arcs 0¼, ½, ¾, 1¼, and so on.

Opposite each of such numbers we mark the transverse divisions of the drum or drums with figures corresponding to the products resulting from multiplying the starting number by numbers of the scale C, indicative of the divisions.

Their numbers for the space marked ¼ would be ½, ¾, 1¼, 1½, 1¾, 2, and so on, the whole being as represented in the drawing.

Now, suppose we desire to ascertain the weight and value of an article, we have only to hang it on the hook, which, being accomplished, the draft on the bar F will cause the bar to descend until stopped by the spring, the barrel or cylinders, in the meantime, being revolved, so as to indicate the weight at the right terminal circle of divisions.

Suppose the weight indicated to be two pounds and one-half, we look on the scale C for the price per pound, and whatever it may be opposite to it on the cylinder we shall find the value, or that twice multiplied by the weight.

If, for instance, we suppose the price to be ten cents per pound, and the weight as above, viz., two and one-half pounds, we should find on the drum, directly opposite the mark 10 of the scale C, the number 25, indicative of the value of the weight.

Thus, it will be seen that, at a glance at the price on the scale C, and at the number that on the drum may be next to the said price, we shall have the value of any article suspended from the hook.

The apparatus will be found very convenient for tradesmen, especially for butchers and venders of vegetables and fruits, who, by means of it, will be saved the necessity of first ascertaining the weight of an article, and next going through the process of multiplying such weight by the price per pound or ounce, as the drum number which may be next opposite the price number will indicate the value.

A small index-pointer, K, arranged on the middle of one end of the slot of the drum serves to show when any circular division of the weight scale may have reached its proper position.

The apparatus may be applied to a common steel-yard beam or

weighing-machine, so as to denote, by its operation, the value of any article weighed thereby, in which case the slide rack would be suspended from or appended to the beam, so as to be moved thereby.

I claim—

The arrangement and combination of the spring H, or its equivalent, the slide rack-bar F, the gear E, the scale C, and the divided cylinder or cylinders D, the whole being substantially as described.

W. H. PHINNEY.

Witnesses:

R. H. EDDY,

J. R. SNOW.

127 UNITED STATES PATENT OFFICE.

CHARLES PFANNE, of Washington, District of Columbia, Assignor of One-half His Right to Herman Stiebeling, of same Place.

Improvement in Apparatus for Measuring and Saving Liquids.

Specification Forming Part of Letters Patent No. 216,450, Dated June 10, 1879.

Application Filed April 22, 1879.

To all whom it may concern:

Be it known that I, Charles Pfanne, a subject of the German Emperior, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Apparatus for Measuring and Saving Liquids, of which the following is a specification.

This invention relates to the class of inventions called "liquid-measures;" but it comprehends an invention not hitherto exhibited in that class.

The object of my invention is to furnish an apparatus whereby a retailer of beer or ale-house keeper may provide his customers, at short notice, with a pint or other measure of the liquor in the vessel they present. Nevertheless, the uses of the device are not confined to the measuring of malt liquors.

It has been a matter of common notice that upon a purchaser's asking for a pint or a quart of beer, and presenting a pitcher or jug, the tapster has been compelled to lose time while the foam was subsiding in measuring out an exact quantity. Some purchasers insist upon having the vessel first weighed and then filled with a weight of liquor corresponding to the measure demanded. The inconvenience of this is obvious; but my invention, while looking to a remedy for this, seeks also to save the drip for use, as may be desired, and in the manner well known to tapsters.

My invention consists in the combination, with the counter-balance and index of a measuring-scale, of a perforated or drip-support pan or chamber-platform and a drip-receptacle or saving-chamber, and of other matter specified.

(Here follows diagram marked p. 126.)

In the accompanying drawings, Figure 1 represents a view in perspective of my apparatus; Fig. 2, a vertical section; and Fig. 3, a top view of the index-operating mechanism.

The drip-receptacle or saving-chamber A is of suitable form and attached to the keg, counter, or other part of the furniture of a bar-room in such manner that the drip-supporting pan or chamber-platform B shall be sufficiently below the spigot or tap to permit said

No. 175.

Comp. Scale Co. v Aut-Scale Co } p 126

C. PFANNE.

Apparatus for Measuring and Saving Liquids.

No. 216,450. Patented June 10, 1879.

Fig. 1.

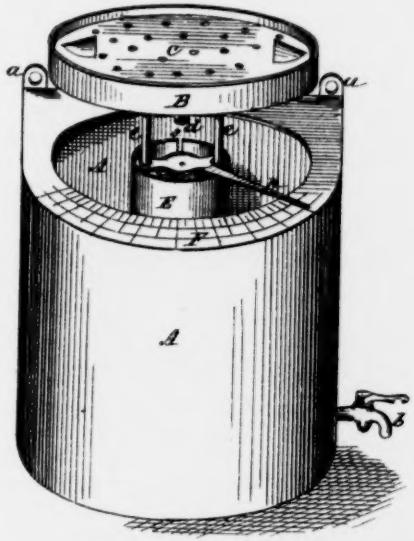


Fig. 2.

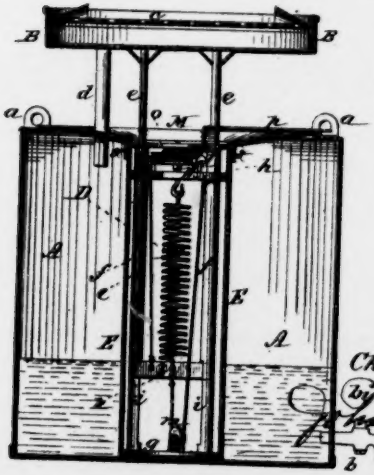
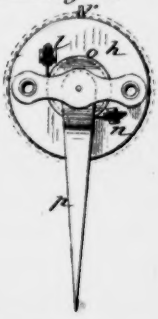


Fig. 3.



Attest:
Hol Perrine
Floyd Norris

Inventor.
Charles Pfanne
by
Geo Johnson
Atty's

chamber-platform to receive the glass, mug, pitcher, or jug, whereby the said vessel may receive its measure of liquor and be conveniently served to the purchaser. This saving-chamber A may rest on a suitable stand or platform, or may hang from its attaching-lugs *a a*, and it has a waste-cock or spigot, *b*, from which the accumulated drip may be drawn.

The chamber-platform B is a pan, preferably circular, provided with a false perforated bottom, *c*, which latter is removable for the purpose of cleaning the chamber. It also has an escape-spout, *d*, from which the liquid flows into the saving-chamber.

The supports for the chamber-platform B consist of two rods or stems, *e e*, which are adapted to move vertically in hollow guide-standards *f f*, which latter rise from a bottom disk, *g*, resting upon the bottom of the saving-chamber A when the apparatus is in operation. There is a counter-balance, D, between these guides *f*, attached at the top to a disk, *h*, and at the bottom to a cross-head, *k*, the latter being adapted to move up and down in slots *i i* of said guides a sufficient distance.

Pulleys and cords *l m n o* operate the index-pointer *p* as the said cross-head descends, and it is caused to descend by the pressure brought upon it by the stems *e e*, which bear down upon it at each side as the weight of the jug being filled upon the chamber-platform B increases, and which rise again when the jug or pitcher is lifted off the said platform.

I provide for the weighing mechanism just described a tubular inclosing-case, E, well assured at the bottom against percolation of liquid, and rising centrally from the bottom of the saving-chamber, and from which the said weighing mechanism may be removed when desired. A detent, *r*, on the disk *h* and a slot, *s*, in the case E prevent the weighing mechanism from turning.

The saving-chamber has a semicircular front, preferably; but this is only made so for convenience, and for the purpose of having a marked scale of measures, F, capable of being reached at all points by the index-pointer *p* in its movement; but the chamber might be square, and have a proper scale-plate attachment.

The scale may have a single, double, or triple row of measures, according to the liquids dispensed from the apparatus; but
128 in beer and *and* ale generally the relation of weight to liquid or wine measure is of a pound to the pint, and so on. This is a matter already well known, and the scale should be gaged and the weighing mechanism made in accord with rules familiar to skilled mechanics.

The purpose of the invention has been pointed out, and a sufficient description given to enable any skilled mechanic to make and use it, when reference is made to the drawings.

In using the apparatus, place the beer-mug, pitcher, or other vessel upon the chamber-platform, and, looking at the scale, its weight will be indicated—say, at two pounds. It is only necessary then to let the beer flow into it from the spigot until the scale indicates three pounds, when the purchaser is furnished with an exact pint of beer.

It will be observed that all the parts of my apparatus are capable of separation for cleaning purposes—a matter of considerable importance.

It will be seen also that every particle of the overflow from glass or pitcher is saved, for the spout *d* from the chamber support pan discharges into the saving-chamber.

The pan or chamber-platform B is supported at a height above the saving-chamber sufficient to permit of the proper descent to make the requisite measures.

Every part of the apparatus may be stamped out of metal except some minor parts, and it can be manufactured for an almost insignificant cost, and will readily sell.

For the purpose of excluding flies and gnats, I provide a cover, M, for the saving-chamber. This cover has a central collar, X, which fits over the inclosing-case E. It is supported upon the flanged rim of the saving-chamber. This cover also, to a certain extent, preserves the beer in the chamber from contact with the air. A simple gauze covering would be enough to exclude insects.

I am aware that measuring-cups have been devised for indicating the measure of liquids by weight, and that numerous liquid-measuring appliances have been used wherein the drip returns to the reservoir. Such matters are utterly foreign to my purpose, and comprehend utterly different mechanisms. My design and purpose have been fully stated above.

I claim—

1. In an apparatus for measuring and saving liquids, the combination of the counter-balance and index of a spring-scale with a discharging chambered perforated support-pan for the vessel to be filled and a saving-receptacle, substantially as and for the purpose described.

2. In an apparatus for measuring and saving liquids, the combination, with the counter-balance mechanism, of an inclosing-case, E, a saving-chamber, A, and a chambered support-pan, B, provided with a spout, *d*, all substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

CHARLES PFANNE.

Witnesses:
A. E. H. JOHNSON,
J. W. HAMILTON JOHNSON.

No. 175.

Comp. Scale Co. v Aut-Scale Co } p. 129

(No Model.) 2 Sheets—Sheet 1.

A. TURNBULL.

WEIGHING SCALE.

No. 378,382. Patented Feb. 21, 1888.

Fig 1

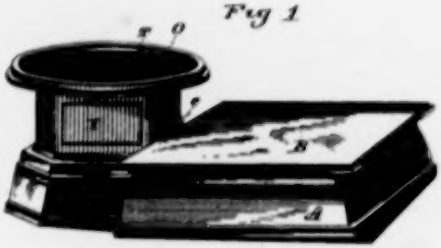
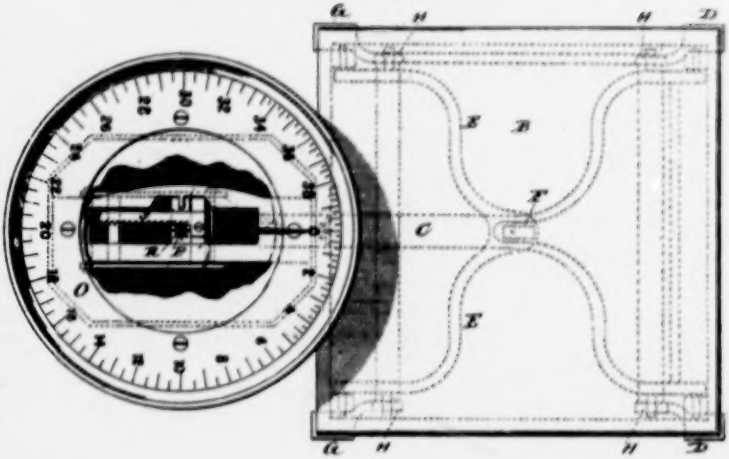


Fig 2



Witnesses
J. N. Shumway
Fred C. Earll

Andrew Turnbull,
Inventor.
By atty,
Wm C. Earll.

No. 175.

p. 130

Comp. Scale Co. v Aut-Scale Co

(No Model.) 2 Sheets—Sheet 2.

A. TURNBULL.

WEIGHING SCALE.

No. 378,382. Patented Feb. 21, 1888.

Fig 3

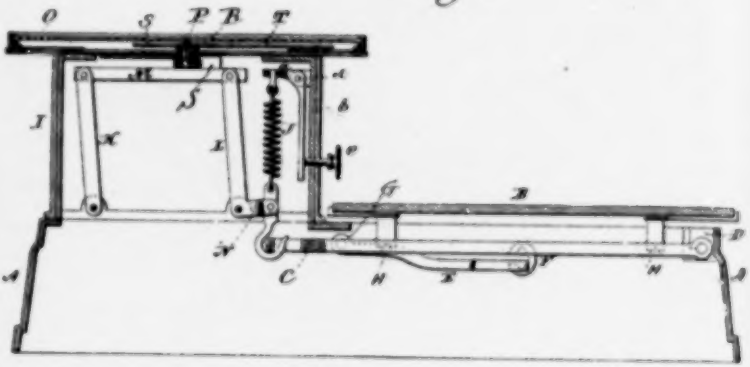
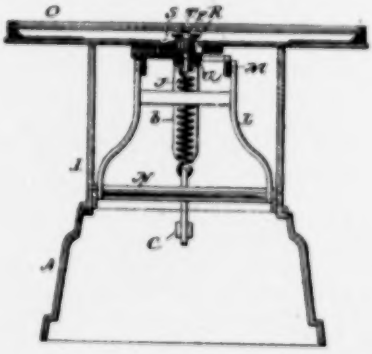


Fig 4



Witnesses.
J. N. Shumway.
Fred C. Earle.

Andrew Turnbull
Inventor.
By attys
Thos. C. Earle.

131 UNITED STATES PATENT OFFICE.

ANDREW TURNBULL, of New Britain, Connecticut.

Weighing-Scale.

Specification Forming Part of Letters Patent No. 378,382, Dated February 21, 1888.

Application Filed April 25, 1887. Serial No. 236,051. (No Model.)

To all whom it may concern:

Be it known that I, Andrew Turnbull, of New Britain, in the county of Hartford and State of Connecticut, have invented a new Improvement in Weighing-Scales; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

(Here follow diagrams marked pp. 129 & 130.)

Figure 1, a perspective view of the scale complete; Fig. 2, a top or plan view, a portion of the dial broken away to show the mechanism beneath; Fig. 3, a vertical sectional side view; Fig. 4, a transverse vertical section centrally through the dial.

This invention relates to an improvement in that class of scales commonly called "platform scales," or such as employ a beam upon which an indication of the weight is made.

The object of this invention is to provide a stationary dial in a horizontal plane—that is, a plane parallel with the platform—with a pointer thereon, a resisting-spring in connection with the levers which support the platform, and mechanism between said levers and the pointer, whereby the amount of resistance of the spring under the action of the system of levers will be indicated on the said horizontal dial, and in such a scale as hereinafter described, and more particularly pointed out in the claims, my invention consists.

A represents the base, upon or within which the operative mechanism of the scale is arranged. Within the base the usual system of levers for the support of the platform B is arranged.

C represents the principal lever, which is bifurcated at one end, the two arms resting in bearings D in the base, the other or single arm extending beyond the platform. The second lever, E, is of similar shape, the two arms connected at one end and hung to the principal lever C, as at F, the two ends of the lever E supported in bearings G in the base in the usual manner. The platform rests on the four arms of the two levers at points H H, also in the usual manner.

At one end of the base is a frame, I, in which vertical spring, J, is hung by its upper end, the lower end connected to the single pro-

jecting end of the arm C, so that the force applied to the platform resting on the levers will be resisted by the said spring. The leverage is so great that a very light spring forms a great resistance. The action of the spring is in a vertical direction.

Within the frame and on the base a pair of parallel levers, K L, are hung, extending upward, and connected at their upper ends by a bar, M, so that under the swinging movement of the levers K L the bar M will be moved longitudinally in substantially a horizontal plane. From the lever L, which stands next the spring J, an arm, N, extends toward the spring, and is connected to the lever C by the same connection which unites the spring to the lever C, so that the up-and-down vibratory movement of the lever C will impart a corresponding horizontal swinging movement to the levers K L.

Above the frame I, and immovably secured to it, is the horizontal dial O. Centrally through this dial is a vertical shaft, P, supported in the frame below, as shown, so as to revolve freely upon its vertical axis. On this shaft is a pinion, R, and attached to the levers K L is a longitudinal rack, S, toothed corresponding to the pinion R, so as to work therein. This rack partakes of the longitudinal movement of the bar M, which connects the two levers K L, so that under the swinging movement of the levers K L the longitudinal movement of the rack S, connected to said levers, will impart to the shaft P, through the pinion R, a corresponding rotation.

Upon the face of the dial the shaft P carries a pointer, T, which traverses about the dial. The graduations on the dial indicate fractions of, say, pounds; hence, the parts standing in the normal condition, with the pointer at zero, a body placed upon the platform will depress the platform, and through the system of levers and connections will impart a rotation to the pointer on the dial corresponding to the extent of the depression, and this extent of depression is resisted by the spring; hence the indications by the pointer on the dial is the resistance which the spring has offered to the load upon the platform, and the parts being properly arranged, and the graduations on the dial corresponding, the weight will be indi-
132 cated thereon in like manner as the weight is indicated on other dial scales.

It is necessary that there shall be some provision for the adjustment of the spring. To do [illegible] I arrange a right-angular or bell-crank lever *a b*, upon a pivot [illegible]'crum, *d*. The upper end of the spring J is secured to one arm, [illegible]f the said lever. The other arm extends down inside the frame, and through the frame is an adjusting screw, *e*, by which the arm *b* may be forced inward, or permitted to move outward, as the case may be, correspondingly extending or contracting the spring. As the spring is extended under the inward movement of the arm *b*, its power upon the platform is increased, and vice versa. This adjustment will permit the pointer to be brought to zero, which indicates the normal condition of the parts.

The frame I is inclosed, this inclosure forming the base on which the dial rests, as shown.

This class of platform-scales is such as is adapted to be used upon

counters or to be transferred to the floor, and in which, in the usual construction, the beam is but a short distance above the platform, while the graduations on such a beam may be conveniently examined on a counter. When placed upon the floor, the beam is so low as to be inconvenient of access, and many times it is impossible to examine the figures on the beam to ascertain the weight, whereas by making the dial stationary in a horizontal plane substantially parallel with the plane of the platform the dial is exposed for examination without the inconvenience attending the examination of the beam, in addition to which is the advantage of the automatic character of the scale, which indicates the weight of the article the instant it is applied to the platform.

It will be understood that in place of the platform a scoup may be applied when that class of scale is preferred. Therefore by the term "platform" I wish to be understood as including any of the known substitutes therefor.

I do not wish to be understood as claiming, broadly, a scale having a horizontal indicating-dial, as such, I am aware, is not new.

I claim—

1. In a weighing-scale, the combination of the base, a system of levers within said base, a platform resting on said levers, a resisting-spring in connection with said levers, levers K L, hung to the base and extending upward, one of said levers, as L, being in connection with the platform-levers, a stationary dial in a horizontal plane and above said levers, a vertical central shaft, P, supported in the frame below the dial and extending up through the dial, a toothed rack in connection with said levers, and a pinion on said shaft, with which said rack engages, substantially as and for the purpose described.

2. The combination of a base, a horizontal system of levers carrying a platform, a vertical spring, one end being connected to the principal lever of said system, a frame extending upward from the base, a bell-crank lever hung in said frame upon a horizontal axis, one arm of said lever extending horizontally inward, the upper end of the spring being fixed to said arm, the other arm of said bell-crank lever extending downward, an adjusting screw adapted to bear against said other arm for the purpose of adjusting the tension of the spring, a stationary dial supported in said frame and in a horizontal plane, a pointer on said dial, and mechanism substantially such as described between said system of levers and said pointer, substantially as and for the purpose described.

AN EW TURNBULL.

Witnesses:
C. S. LANDERS.
FRED GOODRICH.

134 UNITED STATES PATENT OFFICE.

CHARLES MONTGOMERY BABCOCK, of Garrattsville, New York.

Computing Spring-Scales.

Specification Forming Part of Letters Patent No. 421,805, Dated February 18, 1890.

Application Filed February 7, 1889. Serial No. 298,997. (No. Model.)

To all whom it may concern:

Be it known that I, Charles Montgomery Babcock, a citizen of the United States, residing at Garrattsville, in the county of Otsego and State of New York, have invented a new and useful Improvement in Computing-Scales, of which the following is a specification.

My invention relates to an improvement in computing-scales; and it consists in the peculiar construction and combination of devices that will be more fully set forth hereinafter, and particularly pointed out in the claims.

The object of my invention is to provide weighing-scales adapted to indicate instantaneously the precise value of a commodity weighed thereon at any given price.

(Here follows diagram marked p. 133.)

In the drawings, Figure 1 is a front elevation of scales embodying my improvement. Fig. 2 is a sectional view of the same, taken on the line 2 2 of Fig. 1. Fig. 3 is a similar view taken on the line 3 3 of Fig. 1.

A represents a rectangular frame of suitable size and construction, in the ends of which is journaled a shaft B. Keyed or otherwise firmly secured to the center of the said shaft is a pinion C, and on the end portions of the shaft are secured cylindrical drums D E. On one side of the frame is secured a semi-cylindrical case F, which partly covers one side of the cylindrical drums. The said case is provided with transverse horizontal openings or slots G, through which portions of the drums are disclosed, and communicating with one end of the said opening G is a vertical opening H. Extending around the periphery of the drum D at one end of the same is a scale I, indicating pounds and fractional parts thereof, and inscribed on the periphery of the drums D E, and arranged in longitudinal lines which align with the figures of the scale I, are scales K, which are arranged in vertical columns that align with the scale of figures L, which are arranged in a horizontal line along the upper side of the slots G and indicate the prices per pound of commodities.

M represents a stationary vertical guide-rod which depends from the upper side of the frame A, the lower end of said guide-rod ex-

No. 175.

p. 133

(No Model.) Comp. Scale Co. v Aut-Scale C

C. M. BABCOCK.

COMPUTING SPRING SCALES.

No. 421,805. Patented Feb. 18, 1890.

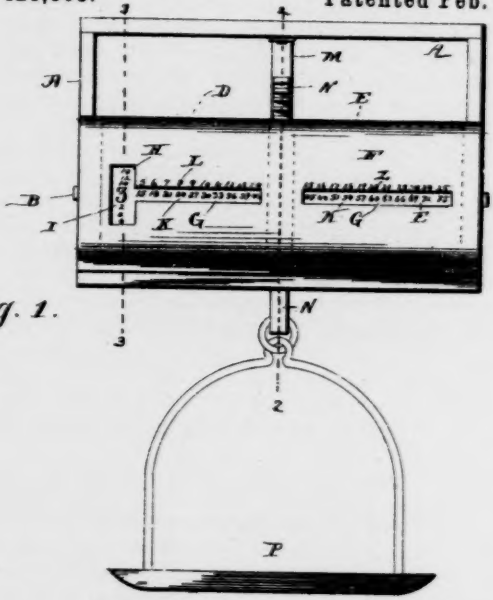


Fig. 1.

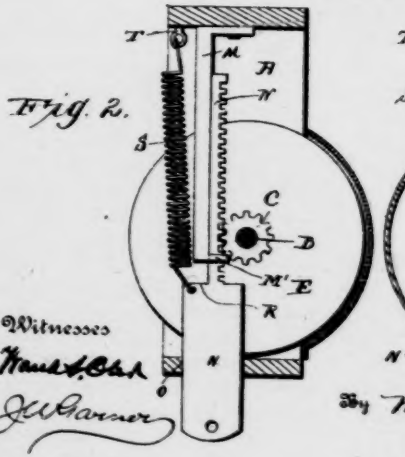


Fig. 2.

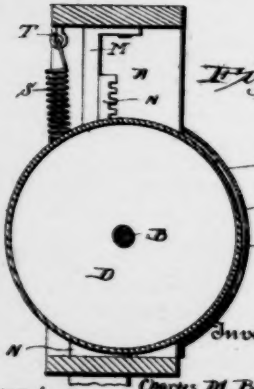


Fig. 3.

Witnesses

Inventor

Charles M. Babcock

By his Attorneys

tending between the cylindrical drums and being bent forward at M′ and provided with a vertical slot.

N represents a rack-bar, which extends through an opening O in the lower side of the frame and passes upwardly loosely through the opening just mentioned, its rear face sliding freely in contact with the front face of the guide M, and to one end of this rack-bar is attached a scale-pan P. The rack-bar engages the pinion C, and is provided on its rear side with a shoulder R, which is adapted to abut against the lower end M′ of the guide-rod M, and thereby limit the upward movement of the rack-bar. The latter reciprocates between the front side of the guide-rod and the teeth at the rear of the pinion.

S represents the coiled retractile spring, which has its lower end attached to the shoulder R of the rack-bar, and has its upper end attached to an eye or keeper T at the upper side of the frame. This spring stands just in rear of the guide-rod M, between the inner ends of the drums D E, and normally retains the rack-bar at the upper limit of its movement with the naught or zero point of the scale I on the drums registering in the slot H in alignment with the open end of the slot G. When a piece of meat or other commodity is placed in the scale-pan, its weight causes the rack-bar to descend against the tension of the spring, and thereby causes the pinion to partly rotate the drums and cause the scale I to indicate the exact weight of the commodity in pounds and ounces, as will be readily understood.

The price of the commodity per pound being known and the weight thereof being indicated by the scale I, it is only necessary to consult the figure of the scale K, which there stands under the appropriate figure of the scale L, to ascertain at a glance the value of the commodity, hence rendering it unnecessary to calculate the same. For instance, if a piece of meat placed on the scale-pan weighs three pounds, the cylindrical drums will come to rest and the figure "3" of the scale I is in the opening H, opposite the end of the opening G; and, assuming that the meat is worth eight cents per pound, its value (twenty-four cents) will be indicated by the figures "24" of the scale K being directly under the figure "8" of scale L.

135 &136 Having thus described my invention, I claim—

1. The rectangular frame A, having the opening O in its base, the flat vertical guide-rod M, rigidly secured to the top of said frame and having its lower end M′ bent forward and slotted, the rack-bar N, its body passing loosely through said opening O, its toothed portion through said slotted end M′, with the rear face thereof sliding upon said flat guide-rod M, and the shoulder R between said body and toothed portion normally resting against said lower end M′, the coil spring S, standing in rear of said guide-rod and connected at its ends to the top of the frame and to the shoulder R, and the pan P, carried by said rack-bar N, in combination with indicating devices, as D E, mounted on a shaft, and a pinion thereon engaging said rack-bar, as and for the purpose set forth.

2. The rectangular frame A, having the opening O in its base, the flat vertical guide-rod M, rigidly secured to the top of said frame

and having its lower end M′ bent forward and slotted, the rack-bar N, its body passing loosely through said opening O, its toothed portion through said slotted end M′, with the rear face thereof sliding upon said flat guide-rod M, and the shoulder R between said body and the toothed portion resting normally against said lower end M′, the coiled spring S, standing in rear of said guide-rod and connected at its ends to the top of the frame and to the shoulder R, and the pan P, carried by said rack-bar N, in combination with the shaft B, journaled in said frame and passing in front of said stationary guide-rod, drums D E, mounted on said shaft on either side of said rod, rack-bar, and spring, pinion C on said shaft, engaging the toothed side of said bar and pressing it against said guide, scales marked on said drums, and a casing F on the frame covering said drums and having openings, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

CHARLES MONTGOMERY BABCOCK.

Witnesses:
H. S. MATHER,
E. C. MILLER.

No. 175.

Comp. Scale Co. v Aut-Scale Co

(No Model.)

J. H. FREEMAN, Jr.

WEIGHING AND COMPUTING SCALES.

No. 431,456. Patented July 1, 1890.

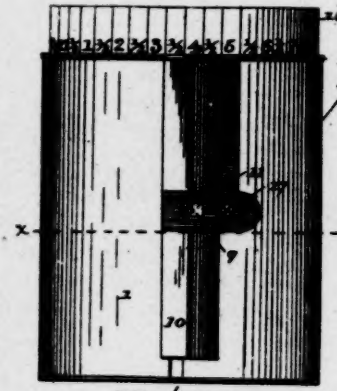
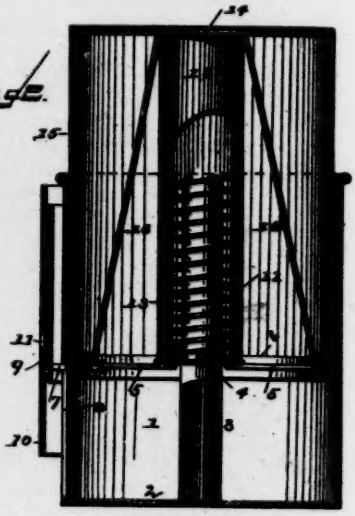


Fig. 2.



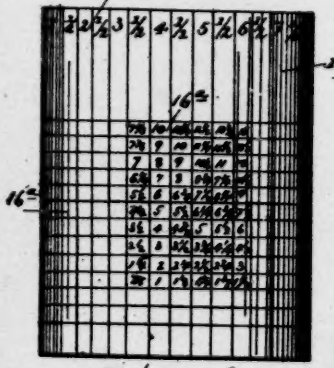


Fig. 3.

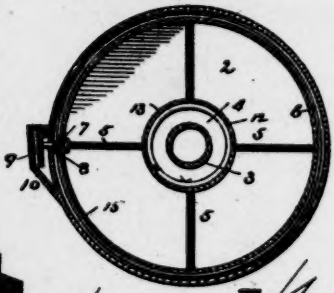


Fig. 4.

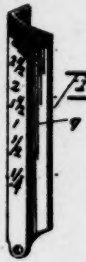


Fig. 5.

WITNESSES:

F. L. Ouvand

Wm. F. Folks

INVENTOR:

James H. Freeman Jr.

by Lowe Dyer & Co.

Attys.

138 UNITED STATES PATENT OFFICE.

JAMES HOLMAN FREEMAN, JR., of Howard, Colorado.

Weighing and Computing Scales.

Specification Forming Part of Letters Patent No. 431,456, Dated July 1, 1890.

Application Filed January 10, 1890. Serial No. 336,477. (No Model.)

To all whom it may concern:

Be it known that I, James Holman Freeman, Jr., a citizen of the United States, and a resident of Howard, in the county of Fremont and State of Colorado, have invented certain new and useful Improvements in Combined Weighing and Computing Scales; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in combined weighing and computing scales, whereby a great saving in time and labor is effected and absolute accuracy in computing the price of the article or substances weighed is insured.

The object of the invention is to provide a device which shall be economical in construction, durable, reliable, effective, and accurate in use, and in which the correct weight of the articles or substances placed therein can not only be readily ascertained, but the price thereof or amount for which they are to be sold will be automatically and accurately indicated, thus effecting a great saving in time, avoiding mental strain or trouble in computing prices, and insuring absolute accuracy in charging for the articles sold.

My invention consists in the novel construction and new combinations of parts hereinafter fully described, and then definitely pointed out in the appended claims.

(Here follows diagram marked p. 137.)

In the accompanying drawings, Figure 1 is a side elevation of my improved weighing and computing scales. Fig. 2 is a vertical sectional view through the center of the same. Fig. 3 is an elevation of the inner movable cylinder. Fig. 4 is a cross-section on line *x x*, Fig. 1; and Fig. 5 is a detail view of the scale.

In the said drawings the reference-numeral 1 indicates a cylinder of heavy tin or sheet-iron about six and one-half inches in diameter and seven inches high. It has a closed bottom 2, in the center of which is secured the upright 3, which may consist of a piece of ordinary gas-pipe. Encircling this upright, so as to move freely up and down thereon, is a collar 4, connected by two or more radial

arms 5 to the band or annular rim 6, of a diameter slightly less than the interior of casing or cylinder 1, so as to move vertically therein. Secured to this band or rim is a short arm or stud 7, which projects through a slot 8 in the cylinder 1, said slot extending from the bottom to about midway of the height thereof. The arm 7 is secured to the lower end of a scale 9, which is inclosed within the casing or housing 10, which is provided with an aperture 11, through which the characters on the scale can be seen. These characters are the usual numerals for indicating pounds and fractions thereof found upon ordinary scales.

Encircling the upright 3, with one end resting upon the collar 4 and its other end bent over upon or secured to the top of the upright, is a coiled spring 12, and encircling and inclosing this spring is a tube 13, carrying at its upper end a disk 14, upon which the cylinder 15 rests. From the top of this tube depend two or more braces 16, which consist of wires or rods secured to the tube at their upper ends, while their lower ends are bent upward a short distance and then downward to form hooks which engage with the band or rim 6. The arrangement of the coiled spring and tube 13 is such that the cylinder 15, which rests upon the disk 14 of the latter, when in its normal position protrudes about half its height above the top of cylinder 1. The surface of cylinder 15 is divided into rectangular spaces 16[a] by vertical and horizontal lines, and in the spaces in the upper half of the cylinder, from left to right, are consecutively arranged numerals from 1 upward, indicating the price per pound at which the articles weighed are to be sold. The spaces on the lower half of the cylinder are occupied by figures denoting the amount of the number at the top of the column (the price) multiplied by the number of pounds or fractions of pounds which would be required to press the cylinder 15 down till said space would come before an aperture or opening 17 in casing or cylinder 1, which number of pounds or fractions thereof is correspondingly marked on the scale 9, which can be viewed through the aperture 11 in the casing or housing 10. In other words, the sum indicated at the opening 17 represents the price indicated at the top of the column multiplied by the number of pounds indicated at aperture 11.

139 A scoop may be secured to the top of cylinder 15 for holding the articles to be weighed in any convenient manner.

The operation is as follows: Place the object to be weighed in the scoop or on top of cylinder 15, and the figures which show through the aperture 11 will indicate the weight of the object. To ascertain the cost of the object at a given price per pound, turn the cylinder 15 till the price per pound sought appears in the column directly above the aperture 17 in cylinder 1, when the sum seen therethrough will represent the cost of the object.

Having thus described my invention, what I claim is—

1. The combination, with the cylinder 1, having the slot 8, aperture 17, the housing 10, having aperture 11, and the arm 7, projecting through slot 8 and carrying the scale 9, of the cylinder 15, having figures at its upper portion indicating the price per

pound of objects to be weighed, and at its lower portion with figures indicating the aggregate price of the number of pounds the object weighed, substantially as described.

2. The combination, with cylinder 1, having aperture 11, housing 10, with aperture 17, the arm 7, scale 9, upright 3, collar 4, rim or band 6, coiled spring 12, and tube 13, having disk 14, of the cylinder 15, movable within cylinder 1 and resting upon disk 14, and having upon its surface rectangular spaces bearing numerals indicating, respectively, the price per pound of the articles to be weighed and the aggregate cost of the number of pounds, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JAMES HOLMAN FREEMAN, JR.

Witnesses:
FREDERIC WATSON GIBBS.
KELLEY PHENE ALLRED.

142 UNITED STATES PATENT OFFICE.

EDWARD HENRY BECKETT, of Glan-eu-lan, Tan-y-grisiau, and CHARLES WARREN ROBERTS, of Plas Weunydd, Blaenau-Festiniog, England.

Automatic Weighing-Machine.

Specification Forming Part of Letters Patent No. 527,828, Dated October 23, 1894.

Application Filed January 11, 1894. Serial No. 496,480. (No Model.) Patented in England January 31, 1893, No. 2,100.

To all whom it may concern:

Be it known that we, Edward Henry Beckett, residing at Glan-eu-lan, Tan-y-grisiau, and Charles Warren Roberts, residing at Plas Weunydd, Blaenau-Festiniog, North Wales, England, subjects of the Queen of Great Britian, have invented new and useful Improvements in Automatic Weighing Machine, (patented in Great Britian January 31, 1893, No. 2,100,) of which the following is a specification.

This invention has for its object the construction of a weighing machine in or by which the weighing of the articles is shown on a dial, a record of the number of weighings made and the respective weights in addition to a checking system by which the person weighing the goods or articles can be identified supposing several persons had access or be told off to do the weighing, there being no indication of weight or movement of the indicating mechanism until an appliance such as a token or tally of special kind be put into the machine to serve for moving a balance and freeing itself, the movement of the balance disengaging a locking device before the weighing and recording can take place. The recording is by marking paper which moves a stage at each weighing.

As an example of the utility of our invention, supposing six persons in a wharf or factory had the power to weigh and deliver goods we provide each of the six persons with metal tickets specially marked or numbered by which they would be known. Now say No. 3 conducts a weighing. He, after placing the goods upon the machine platform inserts a No. 3 ticket. This by dropping on certain levers releases the locking device and the weighing, the recording and the numbering appliances are set free to act accordingly. The same operations are brought about after any other ticket is inserted and so on. The order of the tickets found in the machine corresponds to the recording chart. Thus a complete and perfect system of checking is established, the only duty performed by the weigher being to drop a ticket in and the machine does the rest.

The invention will be clearly understood by reference to the annexed drawings, in which—

(Here follow diagrams marked pp. 140 & 141.)

No. 175.

Comp. Scale Co. v Aut-Scale Co

(No Model.) 2 Sheets—Sheet 1.

E. H. BECKETT & C. W. ROBERTS.

AUTOMATIC WEIGHING MACHINE.

No. 527,828. Patented Oct. 23, 1894.

Fig: 1.

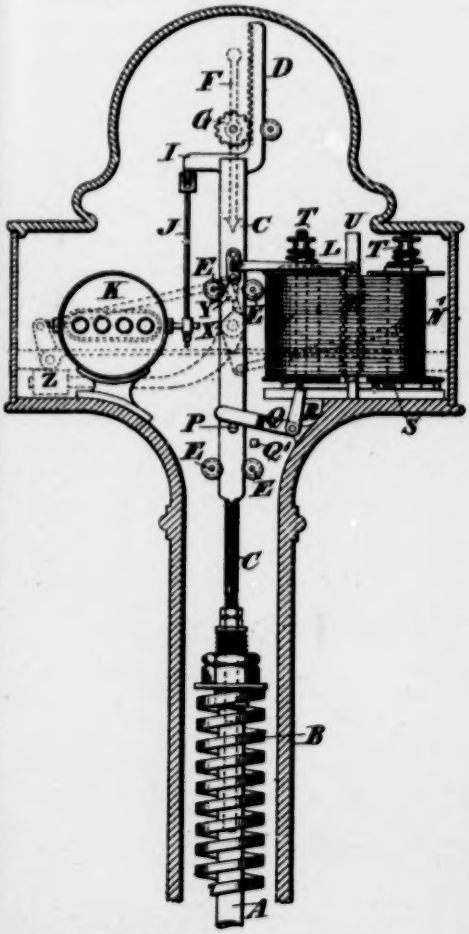
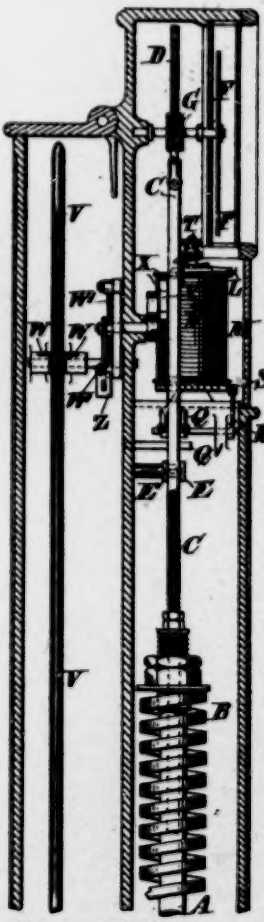


Fig: 2



Witnesses:
C. F. Bolton
H. van Oldenneel

Inventors:
Edward Henry Beckett
Charles Warren Roberts
By Richards & Geier Attorneys.

No. 175.

Comp. Scale Co. v Aut-Scale Co } p. 141

(No Model.) 2 Sheets—Sheet 2.

E. H. BECKETT & C. W. ROBERTS.

AUTOMATIC WEIGHING MACHINE.

No. 527,828. Patented Oct. 23, 1894.

Fig: 3.

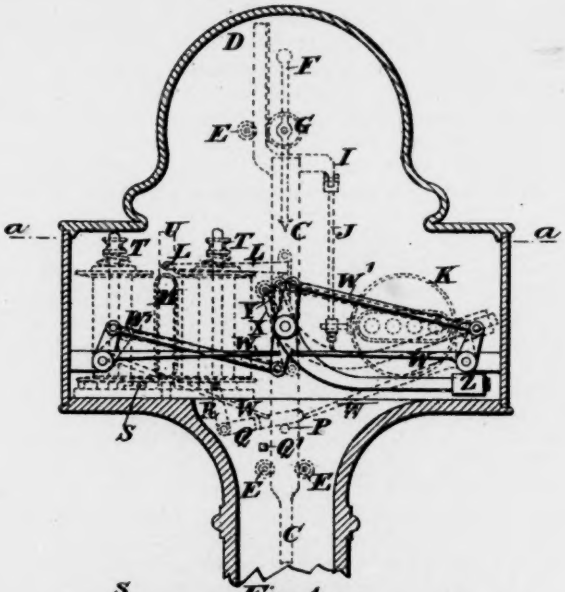
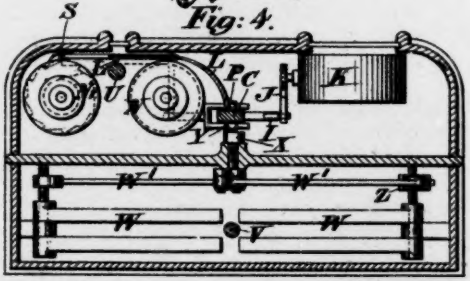


Fig: 4.



Witnesses:
E. B. Bolton
H. Van Aldenmel

Inventors:
Edward Henry Beckett
Charles Warren Roberts
By Richards & Co
their Attorneys.

Figure 1 is a front sectional elevation; Fig. 2, a side sectional elevation; Fig. 3, a sectional elevation from the back of the upper frame, and Fig. 4, a plan on the line *a*, *a*, of Fig. 3.

As represented on the drawings the machine is supposed to be of the usual platform kind with a rod A and spring B for compression by the weight of the goods the upper mechanism remaining fixed until the token or tally has been put into the frame and upon a rod V or tube, or receiver chamber. The token or coin may be introduced into the machine by raising the small door at the top of the rod V. Shown in Fig. 2.

The upper end of the rod A is hollow for a given distance for the lower end of a second rod C to move in to the distance of the spring's compression. The rod C has at its upper part a rack D and is guided for vertical motion by the rollers E, E, the rack D being used for operating the finger F by the pinion G to indicate the weight in the well known manner. The rack D by its arms I and links J causes the index K to register the number of weighings in succession, said index mechanism being inclosed in a casing but visible through a glass.

The rod C carries a pointer L with a pencil or marker projecting therefrom to descend with the rod C and bear against and mark the surface of paper M secured to two reels N, N, from one of which the paper can be drawn and taken up by the other at each uprising motion of the rod C by the stud pin P pressing up the arm Q which otherwise rests on it. The stop Q′ prevents the arm Q descending more than is required for the pawl S to engage in the next tooth in order that the pencil in returning goes back over a greater part of the same mark it made in its descent.

The arm Q is pivoted at R to operate the pawl S for pushing the reel N′ forward a stage to bring a fresh part of the paper in line with the marking pencil. The reels N, N′, are held in tension by the springs and pinch nuts, T, T, the previous marking on
143 the paper having been moved clear of the sight glass which is in front, though the marking when done can be seen by the person weighing the goods and before removing them from the scale platform there being a rigid backing U to insure the prominent marking on the paper.

The horizontal line markings on the paper are graduated to represent given weights and the distance the pencil travels vertically across these lines will indicate the weights, the margin of the paper being marked to correspond to a scale of markings exposed to the man weighing or receiving the goods, said scale being next a facing glass behind which the pencil moves. The number of vertical pencil lines will indicate the number of weighings when the tape paper is removed but by the index or counter K the total weighings over a given period can be seen.

The lever Q follows the rod C until it rests upon the stop Q′ drawing the pawl S into a fresh tooth of the reel N′ ready for moving the paper over at the next up motion of the rod C, this being effected by the rise of the platform and rod A when the weighed goods have been lifted or removed from the scale platform. As soon as the tally has

depressed the levers W, W′, it passes clear and allows the levers W, W′, to return to their normal positions under the action of the weight Z so that the stop or catch X moves into position for re-engaging under the block Y when the rod C returns consequent upon the removal of the weight from the platform.

What we do claim, and desire to secure by Letters Patent, is—

1. In combination in a weighing machine, the casing, the vertically movable rod C, the coin freed devices for controlling said rod, the marker connected with the rod to move therewith, and the paper holding means adapted to maintain the paper in proper position for receiving the markings, substantially as described.

2. In combination, in a weighing machine the casing, the vertically movable rod C, the coin freed devices for controlling the same, the marker carried by the said rod, the paper reels, and the operating connections extending from and operated by the rod C, substantially as described.

3. In combination, in a weighing machine, the casing, the vertically movable rod C, the marker carried thereby, the paper reels, the means for moving the same from the rod C, the coin freed devices controlling the rod C and the dial mechanism operated by the rod C, substantially as described.

In witness whereof we have hereto signed our names this 21 day of December, 1893.

EDWARD HENRY BECKETT.
CHARLES WARREN ROBERTS.

Witnesses:
RICHARD JONES,
Brynmarian, Blaenau-Festiniog, N. W.
DAVID RICHARDS,
The Vicarage, Blaenau-Festiniog, North Wales.

No. 175.

Comp Scale Co. v Aut-Scale Co

(No Model.) 2 Sheets—Sheet 1.

J. H. SWIHART.

SPRING BALANCE COMPUTING SCALE.

No. 539,599. Patented May 21, 1895.

Fig 1.

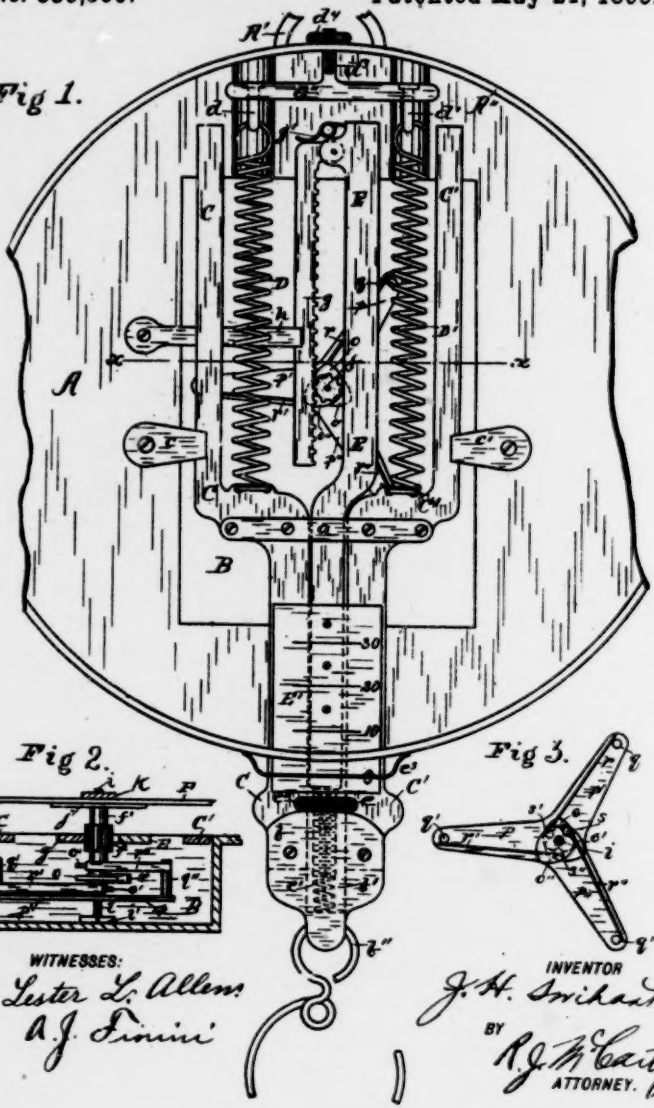


Fig 2.

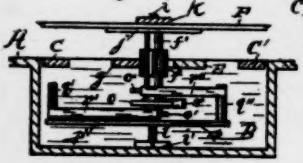


Fig 3.

WITNESSES:

Lester L. Allen.

A. J. Finini

INVENTOR

J. H. Swihart.

BY

R. J. McCarty

ATTORNEY.

No. 175.

Comp. Scale Co. v Aut-Scale Co

(No Model.) 2 Sheets—Sheet 2.

J. H. SWIHART.

SPRING BALANCE COMPUTING SCALE.

No. 539,599. Patented May 21, 1895.

Fig 4.

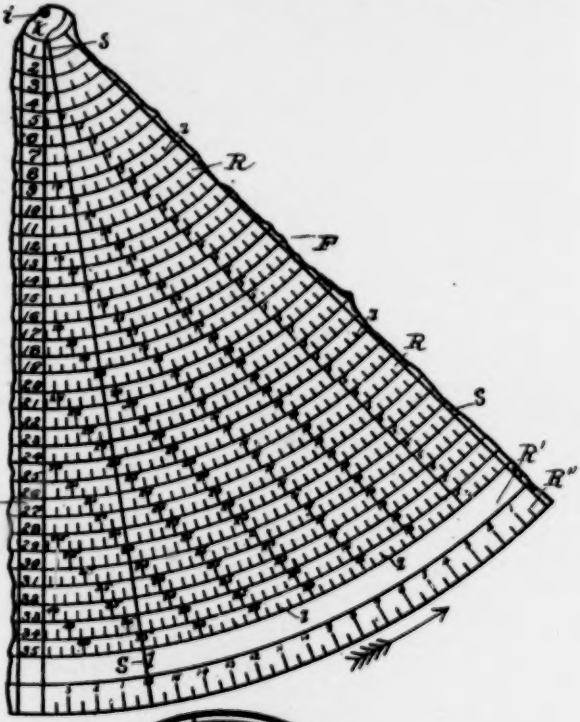
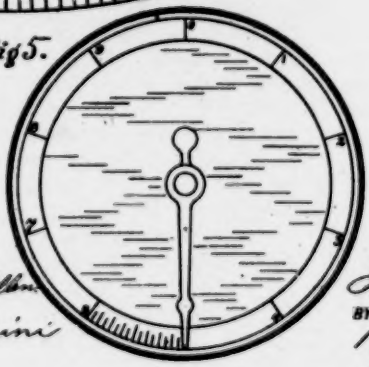


Fig 5.



WITNESSES:

Lester L. Allen

A. J. Finini

INVENTOR

J. H. Swihart.

BY

R. J. Mauty

ATTORNEY.

146 UNITED STATES PATENT OFFICE.

JOHN HENRY SWIHART, of Dayton, Ohio.

Spring-Balance Computing-Scale.

Specification Forming Part of Letters Patent No. 539,599, Dated May 21, 1895.

Application Filed October 26, 1894. Serial No. 527,095. (No Model.)

To all whom it may concern:

Be it known that I, John Henry Swihart, of Dayton, county of Montgomery, State of Ohio, have invented a new and useful Improvement in Spring-Balance Computing-Scales; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in spring-balance scales, and is preferably to be used in connection with a calculating dial, upon which are placed in novel arrangement, numerals designating weight in pounds and ounces, and money value of various quantities of goods or articles sold.

The invention has for its object the further improvement of the spring-balance scale shown and described in my application for United States Letters Patent, filed June 4, 1894, Serial No. 513,487; and to this extent provides a reading dial upon which the numerals are placed in such a manner as to preclude the possibility of confusion in reading them, and further, provides devices interposed between the shaft upon which said dial is mounted, and the sliding bars, whereby the sudden vibrations or shocks ordinarily transmitted to the scale when a load is placed thereon or taken off, will be lessened to such an extent as to not interfere with the successful operation and durability of the scale.

A further object is to provide means for compensating for tare weight, or the weight of the article or receptacle in which the commodity is placed, as distinct from the commodity itself.

To the attainment of the foregoing ends, the improvements have reference to parts that will be fully described in the specification, taken in connection with the drawings hereto annexed, of which—

(Here follow diagrams marked pp. 144 & 145.)

Figure 1 is a front elevation of the supporting-plate, the calculating dial removed in order to exhibit the operating devices; Fig. 2, a section on the line *x x* of Fig. 1, the springs not appearing; Fig. 3, a detached detail plan view of the triple-arm plate, springs thereon, and the heart-cams; Fig. 4, a segment of the calculating-dial and

the price-per-pound scale, showing their relative positions; Fig. 5, a front elevation showing a common form of pound-and-ounce dial, with an index-hand that may be used in connection with the actuating mechanism.

The same letters of reference will be used on corresponding parts in the several views.

The letter (A) designates a metallic supporting plate provided with the usual suspension ring or loop (A′). (B) designates a recess in the central portion of said plate, preferably rectangular to afford desirable space for the devices that are located therein.

(C)—(C′) designate sliding bars maintained in relative positions by transverse plates (*a*) of which there is one on either side of said bars. The lower ends of these bars are rigidly mounted in a socket plate (*b*), with an intervening opening (*b′*) therein.

(*b″*) designates the supporting hook attached to the socket plate (*b*) and upon which it is customary to place a scale pan. (Not shown.)

(*c*)—(*c′*) designate stays attached to the plate (A) and loosely inclosing the outer sides of the sliding bars (C)—(C′). These stays are chiefly useful in protecting the more delicate mechanism from injury during the shipment of the scales.

(D)—(D′) designate coil springs the ends of which are attached to central part of the bars (C)—(C′), and to eyes (*d*)—(*d′*) projecting from a transverse bar (*d″*) having a screw threaded stem (*d²*) engaging with an opening in the annular flange (A″) of the supporting plate. This stem is provided with a thumb nut (*d³*), and by means of these devices a very minute adjustment of the coil springs D and D′ may be had to make up any looseness of said springs that may arise from usage.

(E) designates an intermediate sliding bar mounted between the plates (*a*), and the sliding bars (C)—(C′). The lower end of this bar (E) is decreased in diameter; screw threaded, and enters the opening (*b′*) in the socket plate (*b*).

(*e′*) designates a coil spring seated in the lower extremity of the opening (*b′*) upon which the bar (E) normally rests, see
147 Fig. 1, wherein the opening (*b′*) and spring (*e′*) appear in dotted lines. (*e*) designates a thumb nut on the screw threaded end of said bar. The edges of this nut project from the slot (*e″*) in which it moves, on either side of the bars (C)—(C′), and it may be turned by the fingers to adjust the position of the bar (E) to the lower or higher plane, independently of the bars (C)—(C′).

(E′) designates a plate attached to the bar (E) which bears numerals "10," "20" and "30" designating one, two, and three revolutions of the dial by means of which the capacity of the scale is increased to this extent.

(*e²*) designates an index bar in alignment with the zero mark on the plate (E′) showing the normal position of the sliding bars and dial.

(*g*) designates a rack bar pivoted to the upper end of the bar (E), and (*f*) is a pinion with which said rack meshes, and is kept in gear therewith by a spring (*g′*) mounted on the upper end of the bar and pressing on said rack.

(h) is a guide stay rigidly attached to the supporting plate and also inclosing the outer edge of the rack serving to keep the rack in close proximity with the pinion. In practice it is preferable to place this guide stay on a horizontal plane with the pinion (f).

The pinion (f) is an integral part of a sleeve (f') which is revolubly mounted on the shaft (i), the respective ends of which are journaled in a bearing plate (i') on the inner side of the plate (A), and the bar (k) upon which are placed the numerals indicating the prices per pound. This scale or bar (k) is mounted in a similar manner to the mounting of that shown and described in the pending application hereinbefore referred to, but is read in a vertical position instead of the horizontal.

(j) designates a metallic plate rigidly mounted on the outer end of the shaft (i). The calculating dial (F) is fixed to this plate, therefore revolves with said shaft on the inside of the price per pound indicating bar.

Upon the inner end of the pinion sleeve there are rigidly mounted a plurality of heart cams to the numer of three, indicated by (o)—(o')—(o''), one above the other as shown in Fig. 2, and occupying radial positions shown in Figs. 1 and 2.

On the inner end of the shaft (i) adjacent to the inner end of the pinion sleeve, there is rigidly mounted a plate having a plurality of radial arms (p)—(p')—(p'') provided with pins (q)—(q')—(q'') upon which are mounted horizontally, a corresponding number of resilient bars or springs (r)—(r')—(r''). These springs project inwardly, and have on their inner ends pins or lugs (s)—(s')—(s'') that normally rest against the peripheries of the cams. The functions of these cams and adjunctive devices are to co-operate in revolving the calculating dial to the proper position to show the value of the article or commodity sold, when a sudden movement or jerk is imparted to the sliding bars by placing the load quickly upon the scale pan. It is important that the dial be not subjected to these sudden vibrations, yet be allowed to share in the common movement of the parts when jerks or sudden vibrations are not imparted to the primary movable parts. Therefore the strength of the spring bars (r)—(r')—(r'') is sufficient, when the pins (s)—(s')—(s'') are in the notched portion of the cams, to revolve in unison with the pinion sleeve; but at such time as a sudden movement turns said pinion sleeve, the pins draw out of said notches, and leave the shaft (i), spring bars, and dial to follow in their rotation, under the tension of said spring bars.

The functions of these devices are not changed from those functions shown and described in my pending application hereinbefore referred to. In the present invention, however, I equalize more thoroughly the pressure that is brought to bear between the pinion sleeve and the dial shaft, by employing three cams equi-distant apart, and thereby obtain a more positive movement of the dial in moving simultaneously with the pinion sleeve, or in moving independently thereof; and again, by mounting the spring-supporting plate upon the shaft, and the cams upon the pinion sleeve, said sleeve is thereby relieved of that much weight and resistance, and the springs are not controlled directly by the movement of said

pinion sleeve. The result is, the dial is still further protected from the many sudden jars that might be transmitted to the pinion sleeve by the causes hereinbefore stated.

The calculating dial (F) has thirty five concentric lines (R) containing numerals showing the value of each quantity of goods sold. Inclosing these lines are two outer concentric lines (R')—(R") containing numerals indicating pounds and ounces, from zero up to ten pounds. These concentric lines are divided by a series of radial lines (S) which extend from the axis to the circumference of the dial and constitute the dividing lines by which the segmental spaces for each pound, and the fractional parts thereof, and the valuations are obtained. The inner concentric lines (R) are stepped off by indices (z) each of which represents one cent. Every five of said indices are designated by the numerals "5," "10" "15" and so on in numerical progression. These indices or marks (z) as will be noted, increase in number with the enlargement of each successive concentric line, and are brought in alignment with the price per pound scale (k) by the mechanism hereinbefore described. The reading of the dial in connection with the scale (k) is not troublesome owing to this arrangement of the figures. The commodity sold, being placed on the scale pan, the dial instantly revolves and brings the various indices and numerals thereon in alignment with and adjacent to the numerals on the price per pound scale
148 (k). For example, one pound and four ounces of butter at thirty two cents per pound will cost forty cents. The tare or weight of the crock or other receptacle in which the butter is placed can be taken off by turning the thumb nut (e) to elevate or restore the sliding bar (E) and dial F to zero. This of course is done before the commodity is placed in said crock.

In Fig. 5, I have illustrated an ordinary pound and ounce dial with a pointer thereon, that may be used with satisfactory results in connection with the mechanism described in the foregoing specification, in which instance the pointer is fixed to the shaft (i) in place of the calculating dial.

Having fully described my invention, I desire to claim—

1. The combination of spring-controlled sliding bars, two of which are movable together; an intermediate sliding bar, movable with said bars or independently thereof; a rack bar carried by said intermediate sliding bar; a pinion and shaft rotated by said rack bar; and means for adjusting said intermediate sliding bar, to take off tare, substantially as described.

2. The combination of spring-controlled sliding bars; the adjustable transverse bar (d") to which said springs are attached; a thumb nut for adjusting said bar (d"); an intermediate sliding bar movable with the before-mentioned sliding bars or independently thereof; a rack bar carried by said intermediate bar; a pinion and shaft rotated by said rack bar, and means for adjusting said intermediate bar to take off tare, substantially as described.

3. The combination of spring-controlled sliding bars; a rack bar pivoted to one of said bars; a pinion sleeve movable by said rack bar; cams mounted on, and a shaft inclosed by said pinion sleeve;

springs carried by said shaft that normally rest against the peripheries of said cams, substantially as described.

4. The combination of spring-controlled sliding bars; a shaft with a calculating dial as herein described, and springs mounted thereon; a pinion sleeve with cams thereon, with which said springs normally engage; and a rack bar pivoted to one of said sliding bars, and means for taking off the tare, substantially as described.

5. The combination of a price and weight indicating dial as described; a vertically positioned price per pound scale adjacent thereto; a shaft upon which said dial is fixed; and springs mounted on said shaft; a pinion sleeve, and cams fixed thereto, and means for rotating said pinion sleeve, substantially as described.

6. The combination of sliding bars, two of which have a fixed connection at their lower ends, and one of which is movable with said two or independently thereof; a rack bar pivoted to said independently movable bar; a plurality of cams fixed to, and a shaft loosely inclosed by said pinion sleeve; a plurality of springs carried on said shaft, and normally pressing said cams, substantially as described.

7. The combination with the supporting plate; of a plurality of sliding bars, two of which are inseparably movable, and one of which is movable with said two or independently thereof to take off tare; springs attached to two of said bars, and means for adjusting said springs to preserve a normal tension thereof; a rack bar pivoted to said independently movable sliding bar; a pinion sleeve movable by said rack bar; a shaft inclosed by said pinion sleeve, and means on which said shaft and pinion sleeve for causing a uniform or independent movement of said parts, substantially as described.

8. The combination of sliding bars (C)—(C'); socket plate (*b*) to which said bars are attached; an intermediate sliding bar (E) having its lower end screw threaded and inserted in an opening (*b'*) in said socket plate; a coil spring seated in said opening upon which the bar (E) normally rests; a thumb nut to elevate or lower the bar (E) to zero; a calculating dial, and means interposed between said dial and the bar (E) for moving said dial in unison with the bar (E) or independently thereof, substantially as described.

9. In a price computing scale, a dial upon which are indicated in circumferential columns, prices ranging from cents to dollars; and weights ranging from ounces to pounds; in combination with a shaft upon which said dial is rigidly mounted; spring bars carried by said shaft; a pinion sleeve inclosing said shaft, and upon which a plurality of cams are mounted against the peripheries of which, said spring bars normally press; a rack by which said pinion sleeve is rotated; and a sliding bar to which said rack is pivoted, and means for adjusting said sliding bar to relieve the scale of tare, substantially as described.

In testimony whereof I have hereunto set my hand this 19th day of October, 1894.

JOHN HENRY SWIHART.

Witnesses:
CHARLES A. HOYT.
R. J. McCARTY.

153 UNITED STATES PATENT OFFICE.

ALBERT U. SMITH, of Seymour, Assignor of One-half to Edmond C. Smith, of Westport, Connecticut.

Automatic Computing-Scale.

Specification Forming Part of Letters Patent No. 545,616, Dated September 3, 1895.

Application Filed May 2, 1895. Serial No. 547,929. (No Model.)

To all whom it may concern:

Be it known that I, Albert U. Smith, a citizen of the United States, residing at Seymour, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Automatic Computing-Scales; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in weighing-scales whereon the weight and selling price of a commodity may be ascertained at a glance without any mental calculation on the part of the person using the same, but particularly resides in the details of construction and combination of elements, as will be fully hereinafter described, and specifically pointed out in the claims.

The object of my invention is to provide scales of this description which shall be extraordinarily sensitive to weights of small amount and to accurately register the same.

A further object of my invention is to provide an adjusting mechanism by the use of which the springs employed may at all times be held at a uniform tension, or, in other words, when said springs have become weakened or distorted by long usage the adjusting mechanism may be employed to restore a proper tension to said springs; also said adjusting mechanism may be used to set the scales at a "balance" after the weighing-pan is suspended therefrom, and the difference in weight of various kinds of weighing-pans may be compensated for by the use of this mechanism.

(Here follow diagrams marked pp. 149, 150, 151 & 152.)

In the accompanying drawings, Figure 1 is a front elevation showing a weighing-pan suspended from the scales; Fig. 2, a section at the line *x x* of Fig. 3; Fig. 3, a section on the line *y y* of Fig. 2; Fig. 4, a section on the line *z z* of Fig. 2, and Fig. 5 a detail elevation of the indicator-drum.

Similar letters of reference indicate like parts in the several figures of the drawings.

a is the casing, on opposite sides of which are rigidly secured uprights *b*.

No. 175.

Comp. Scale Co. v Aut-Scale Co. } p. 149

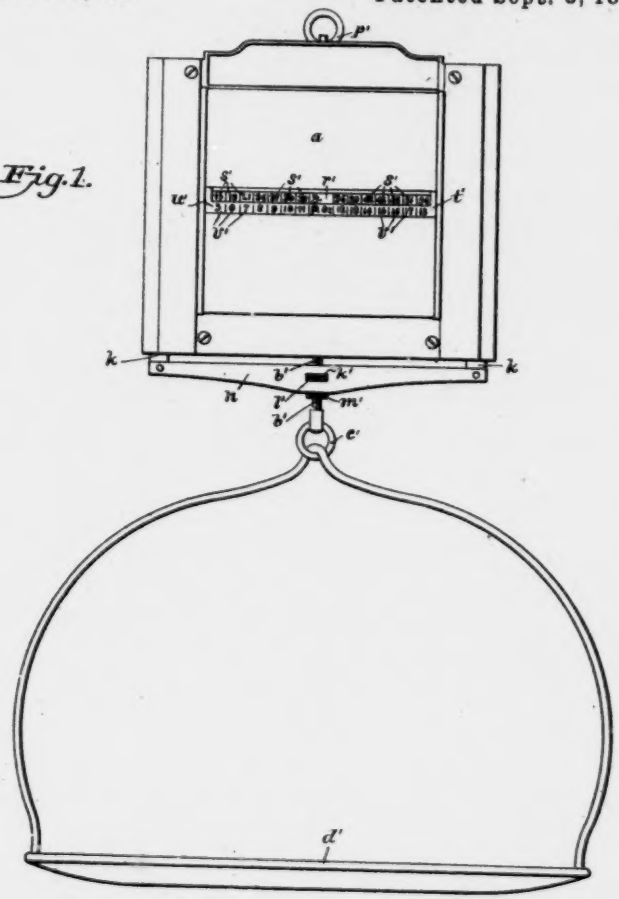
(No Model.) 4 Sheets—Sheet 1.

A. U. SMITH.

AUTOMATIC COMPUTING SCALE.

No. 545,616. Patented Sept. 3, 1895.

Fig. 1.



WITNESSES:

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M. T. Snyder

INVENTOR

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BY

J. M. Smith Jr.

ATTORNEY

No. 175.

Comp. Scale Co. v Aut-Scale CO } p. 150

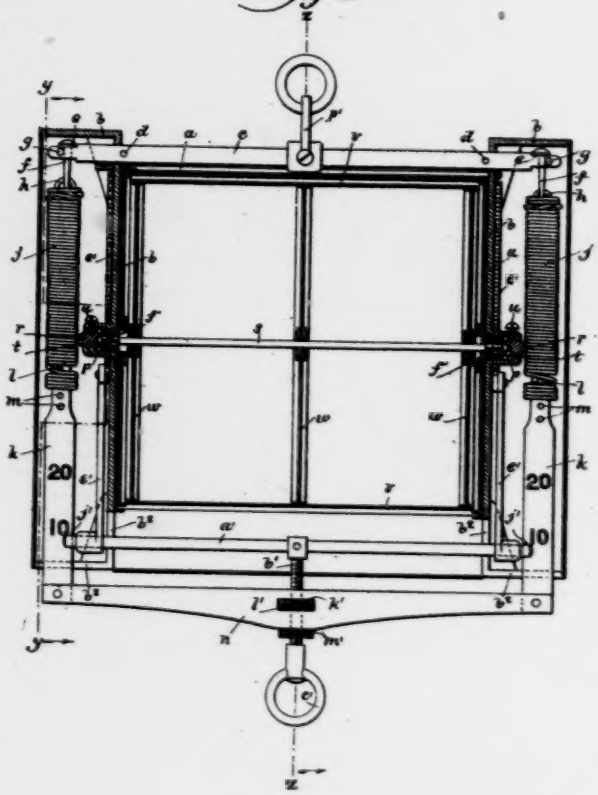
(No Model.) 4 Sheets—Sheet 2.

A. U. SMITH.

AUTOMATIC COMPUTING SCALE.

No. 545,616. Patented Sept. 3, 1895.

Fig. 2.



WITNESSES:

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ATTORNEY

No. 175.

Comp. Seale Co. v Aut-Scale Co. p. 157

(No Model.) 4 Sheets—Sheet 3.

A. U. SMITH.

AUTOMATIC COMPUTING SCALE.

No. 545,616. Patented Sept. 3, 1895.

Fig. 3.

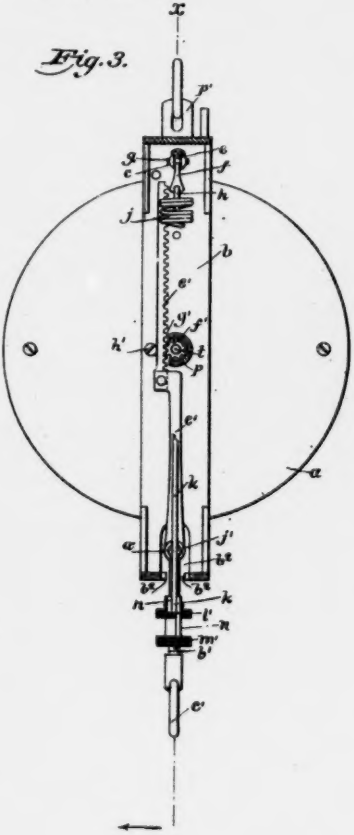
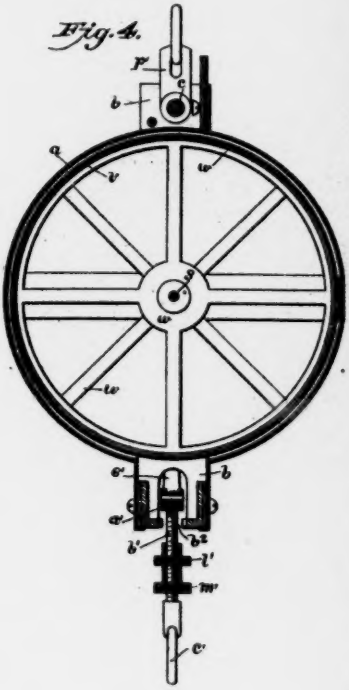


Fig. 4.



WITNESSES:

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ATTORNEY

No. 175.

Comp. Scale Co. v Aut-Scale Co } p. 152

(No Model.) 4 Sheets—Sheet 4.

A. U. SMITH.

AUTOMATIC COMPUTING SCALE.

No. 545,616. Patented Sept. 3, 1895.

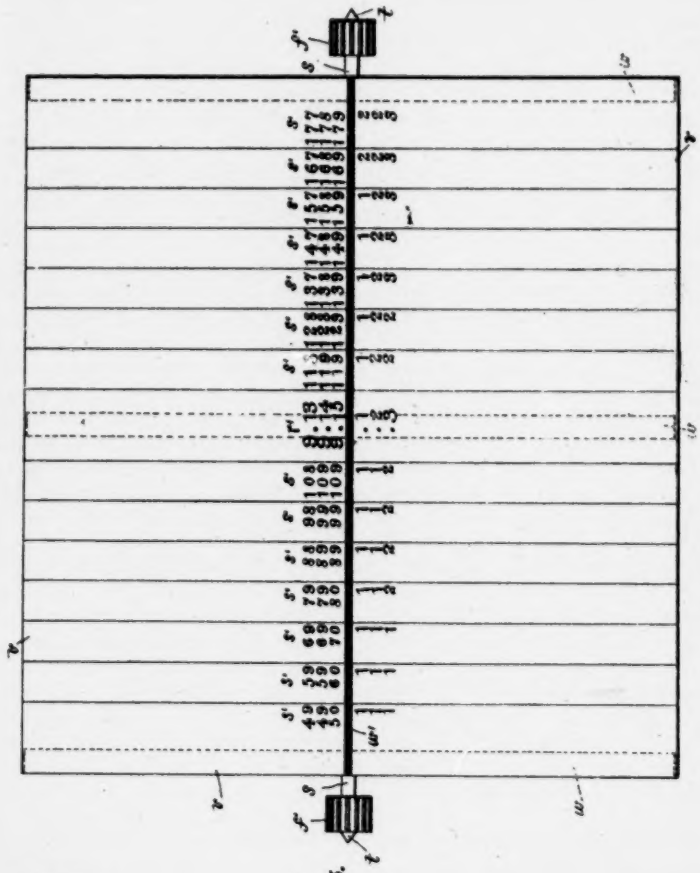

Fig. 5.

WITNESSES:
J. F. Frisch.
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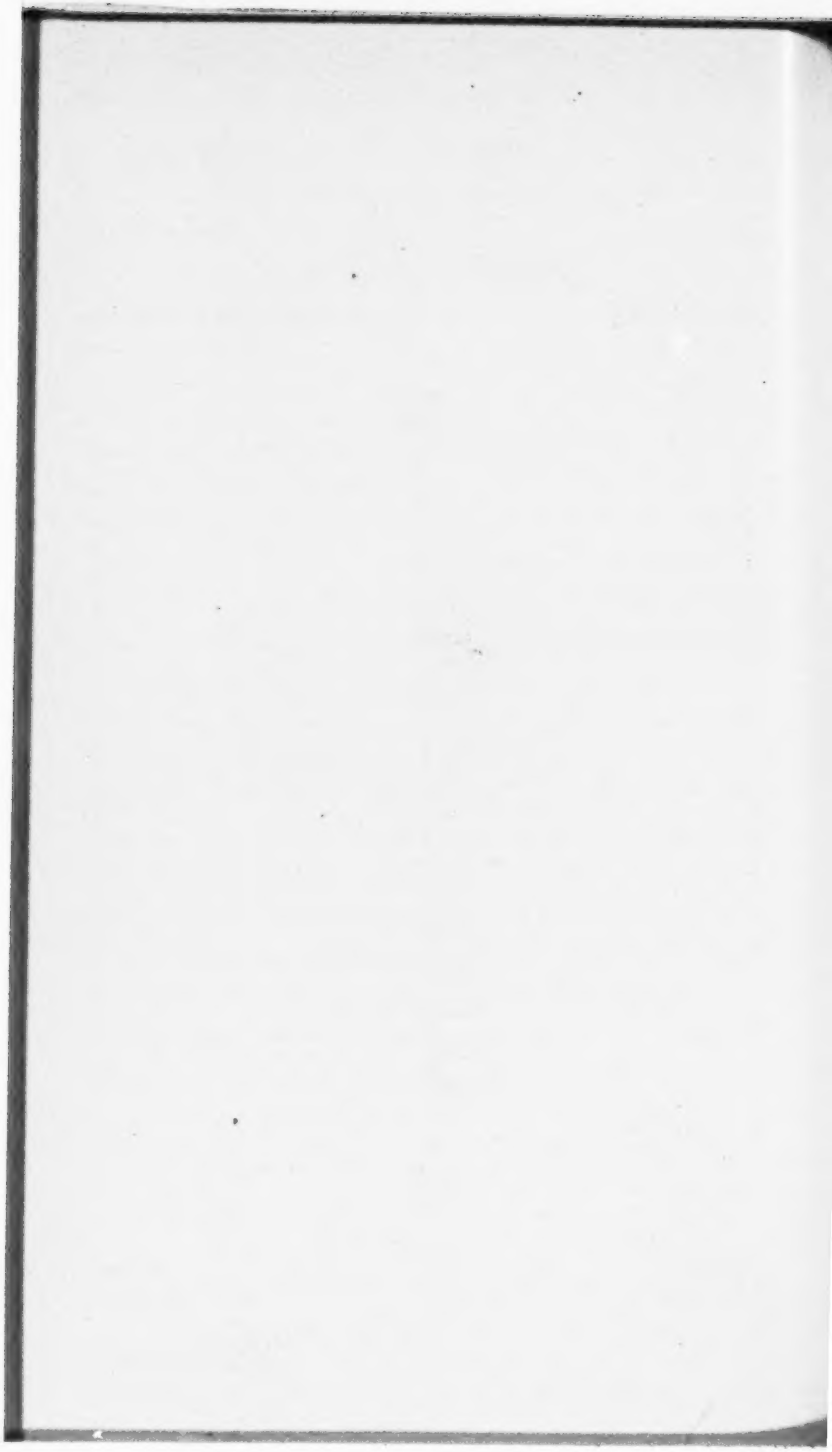
INVENTOR
A. U. Smith
BY
ATTORNEY



c is a cross-bar loosely journaled in the uprights *b* above the top of the casing, but held as against lengthwise movement by pins *d*, which pass through said bar. The ends of the cross-bar *c* are notched, as shown at *e* in Fig. 3, and the headed draft-pins *f* are loosely held within these notches by keeper-pins *g*. The said draft-pins have secured loosely in their lower ends bow-shaped clips *h*, the ends of which are inserted between the coils of the springs *j*.

k are draft-rods the upper ends of which are connected to the lower coils of the spring *j* by means of clips *l*, similar to the clips *h*, which are pivotally connected to the rods *k* by simply inserting said clips through perforations *m* in said rods. Each of the rods *k* has a series of these perforations *m*, so that a greater or lesser length of spring may be used, as the exigencies of the case require. The lower ends of the draft-rods are pivotally connected by a yoke *n*.

p are hollow bosses formed integral with the uprights *b*, within the outer extremities of which are adjustable bearings *r* for the shaft *s*. The ends of the shaft *s* are formed into cone-journals *t*, and the bearings *r* from this shaft are correspondingly shaped. *u* are set-screws for holding said bearings in place after a proper adjustment has been made.

v is an indicator-drum, which is rigidly secured to the shaft *s*. It is a very essential feature that the indicator-drum in scales of this nature should be made of very light material, for the reason that if it be not so made the sensitiveness and accuracy of the scales will be more or less affected. For instance, heretofore in scales of this character if a given quantity is weighed successively a number of times it will be found that said scales scarcely ever indicate the weight of such quantity twice exactly the same, there always being some slight variation in the amount registered. This is in a great measure due to the fact that the more the actual weight of the indicator-drum itself the greater must be the force necessary to operate it, and in order to overcome this disadvantage I have constructed the drum of thin skeleton frames *w*, of aluminum, while the periphery is formed of a thin sheet of paper pasted to the frames.
154 In this way I have secured a structure that is so light that the force necessary to operate it is almost insignificant.

a' is a cross-rod, to which is secured a screw *b'*. The screw *b'* passes loosely through the yoke *n*, as shown at Fig. 4, and has within its lower end a ring *c'*, from which the scale-pan *d'* is suspended.

Pivoted to the cross-bar *a'* are rack-bars *e'*, which engage pinions *f*, rigid with the shaft *s*. The hollow bosses *p* are at one side slotted or cut away, as shown at *g'* in Fig. 3, so that the rack-bars may be permitted to engage the pinions *f'*.

h' are keepers, (but one shown,) which insure the engagement of the rack-bars and pinions.

The ends of the cross-rod *a'* are notched, as shown at *j'*, and said ends embrace the edges of the draft-rods *k* in such manner as to be capable of sliding thereon.

k' is a slot in the yoke *n*, and within this slot is an adjusting-nut *l'*, which takes on the thread of the screw *b'*. *m'* is a set-screw on the lower portion of said screw. By revolving the nut *l'* the cross-

rod a', to which the screw b' is connected, will be caused to move up or down, as the case may be, carrying with it the rack-bars e', which will, through the pinions f', effect the rotation of the indicator-drum as may be desired. Thus should the scales when at rest indicate anything other than a perfect balance or zero, by turning the nuts l' m' the drum may be brought into proper relative position and there secured without disturbing the tension of the springs j. Should it be found necessary to increase or diminish the tension of the springs j, this may be easily effected by advancing the clips h along the coils of said springs after the manner of advancing a nut along a screw-thread. The lower portions of the uprights b are formed into guideways b^2, through which the ends of the cross-rod a' and said draft-rods k pass, so that said rods will be properly guided in their movements.

The cross-bar c is provided with a ring-clip p', by means of which the scales may be suspended from any suitable support.

Around the periphery of the drum v, at the central portion of the same, is a scale r', (see Figs. 1 and 5,) indicating pounds and ounces. s' are columns of figures parallel with the scale r' and arranged in alignment therewith, which indicate the total amount in money for which a commodity should be sold after it has been weighed.

t' is an opening in the face of the casing a, within which is fitted a glass u', through which may be seen the figures on the periphery of the drum. The glass u' has printed or suitably inscribed thereon a series of figures v', which register with the columns of figures s' and indicate various prices per pound.

The central portion of the glass has marked thereon the abbreviations "P." and "Oz.," and the scale r' on the periphery of the drum is adapted to register with these characters. Supposing that some article which weighs exactly three pounds has been placed in the weighing-pan of the scales, the indicator-drum will be brought to a position where the figure 3 in the column of pounds on the scale of the drum will be disclosed to view, as shown in Fig. 1. Supposing, also, that the price of such article is eight cents per pound; the operator will consult the series of figures on the glass until the number 8 is reached, when immediately above it will appear the total value of the article—*i. e.*, 24.

In Fig. 5 I have shown a detail view of the face of the drum, whereon the figures are inscribed, and the broad straight line w' shown in this figure is intended to show through the glass u' when the scales are at rest and at a balance or zero.

I am aware that computing-scales have heretofore been constructed wherein a drum or cylinder is employed having the divisions of the weight-scale and other figures on its periphery, whereby the total selling price of an article may be determined without mental calculation on the part of the operator, and I am also aware that said drum has been operated by a rack-bar and pinion, and I therefore do not broadly make any claim to these features; but

What I do claim, and desire to secure by Letters Patent, is

1. The combination of the casing a the uprights b rigid with the sides thereof, the cross bar c, the draft rods k connected at their lower

ends by a yoke *n*, the springs interposed between said draft rods and cross bar in the manner specified, the indicator drum journaled within the uprights and carrying pinions which are engaged by rack bars, the cross rod *a'* to which the lower ends of the rack bars are connected, the screw *b'* depending from the cross rod and passing through the yoke *n*, and the set nuts on said screw, substantially as and for the purpose set forth.

2. The combination of the indicator drum constructed of thin skeleton frames of a very light material, the periphery of said drum being formed of a sheet of paper having the divisions of the weight scale and other numerals printed thereon, the pinions carried by the shaft of said drum, adjustable conical bearings wherein said shaft is journaled, the cross bar *c* having a suspending clip secured thereon, the headed draft pins supported loosely within the notched ends of the cross bar *c* after the manner of a stirrup connection, the bow shaped clips in the ends of the draft pins, the springs between the coils of which said clips are inserted, whereby the tension on said springs may be altered as described, the draft rods *k*, the yoke *n* whereby said rods are connected, the cross rod *a'* to which the rack bars are pivoted and whose ends are notched and embrace said draft rods so as to be capable of sliding thereon, a ring from which the scale pan is suspended, and suitable adjusting connections between the yoke *n* and said cross rod *a'*, substantially as described.

3. The combination of the casing *a*, the uprights *b* rigid with the sides thereof, the cross bar *c*, the draft rods *k* connected at their lower ends by a yoke *n*, the springs interposed between said draft rods and cross bar, the indicator drum journaled within the uprights and carrying pinions, the rack bars engaging with said pinions, the cross rod *a'* to which the lower ends of the rack bars are connected, and the pin *b'* pivoted to said cross rod and rigidly connected with the yoke *n* as to vertical movement and provided with means whereby a scale pan may be attached, substantially as set forth.

4. The combination of the cross rod *a'*, the springs connected at their upper extremities to a stationary part of the scale, the draft rods suspended from the lower extremities of said springs, the yoke connecting the lower ends of said draft rods, the pin *b'* pivoted to the cross rod *a'* and depending therefrom and provided at its lower extremity with means for attaching a scale pan said pan being rigidly connected with the yoke *n* as to vertical movement, the rotatory weight indicating device, and means carried by the cross rod *a'* for operating said device, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT U. SMITH.

Witnesses:
F. W. SMITH, JR.,
M. T. LONGDEN.

157 UNITED STATES PATENT OFFICE.

HORACE E. SWIFT, of Boston, Massachusetts, Assignor to the National Computing Scale Company, of Portland, Maine.

Computing-Scale.

Specification Forming Part of Letters Patent No. 579,550, Dated March 23, 1897.

Application Filed January 25, 1896. Serial No. 576,847. (No Model.)

To all whom it may concern:

Be it know that I, Horace E. Swift, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Computing Scales, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention has for its object the production of a novel and accurate computing-scale wherein the aggregate price of the article weighed may be computed automatically according to the unit price of said article.

The construction of the scale is at once simple, strong, and readily operable, while quickly responsive to the slightest change of weight or price per unit and accurate throughout the entire range of the scale.

In this invention the operation of the computing mechanism is determined by the change of form of a controlling member, such change varying in accordance with the unit price, the controlling member being herein shown as a preferably resilient metallic strip adapted to be twisted into spiral form, the pitch of the spiral or helix varying in accordance with the unit price. This controlling member herein is in such coöperative engagement with the computing mechanism that the operation of the latter is determined by the pitch of the imparted spiral.

I have herein for convenience shown my invention as embodied in a beam-scale; but my invention is not restricted thereto, nor to any particular construction and arrangement of apparatus, for so far as I am aware it is broadly new to govern the operation of the computing mechanism in a scale of the class described by a change or variation in the form of a controlling member, such change or variation of form corresponding to the unit price of the article.

(Here follows diagram marked p. 156.)

Figure 1, in side elevation, represents one well-known form of beam-scale with my invention embodied therein. Fig. 2 is a transverse sectional view showing the price-computing mechanism, taken on the line *x x*, Fig. 1. Fig. 3 is a detail view in elevation and

No. 175.

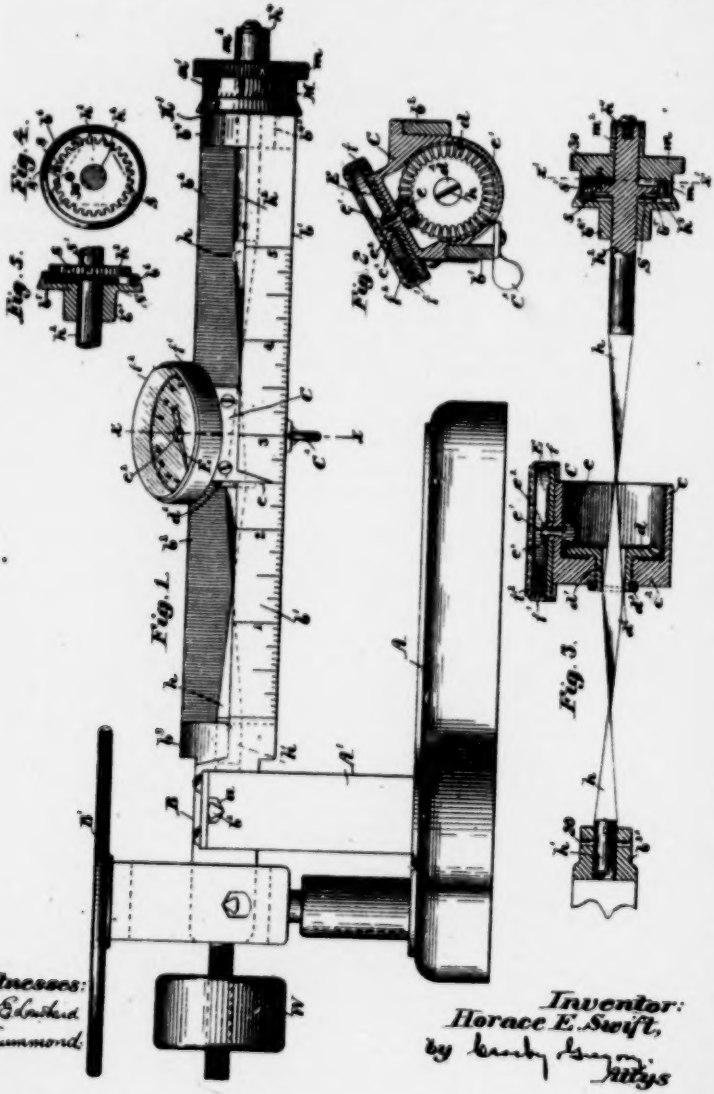
Comp. Scale Co. v Aut-Scale Co. } p. 158

(No Model.)

H. E. SWIFT.

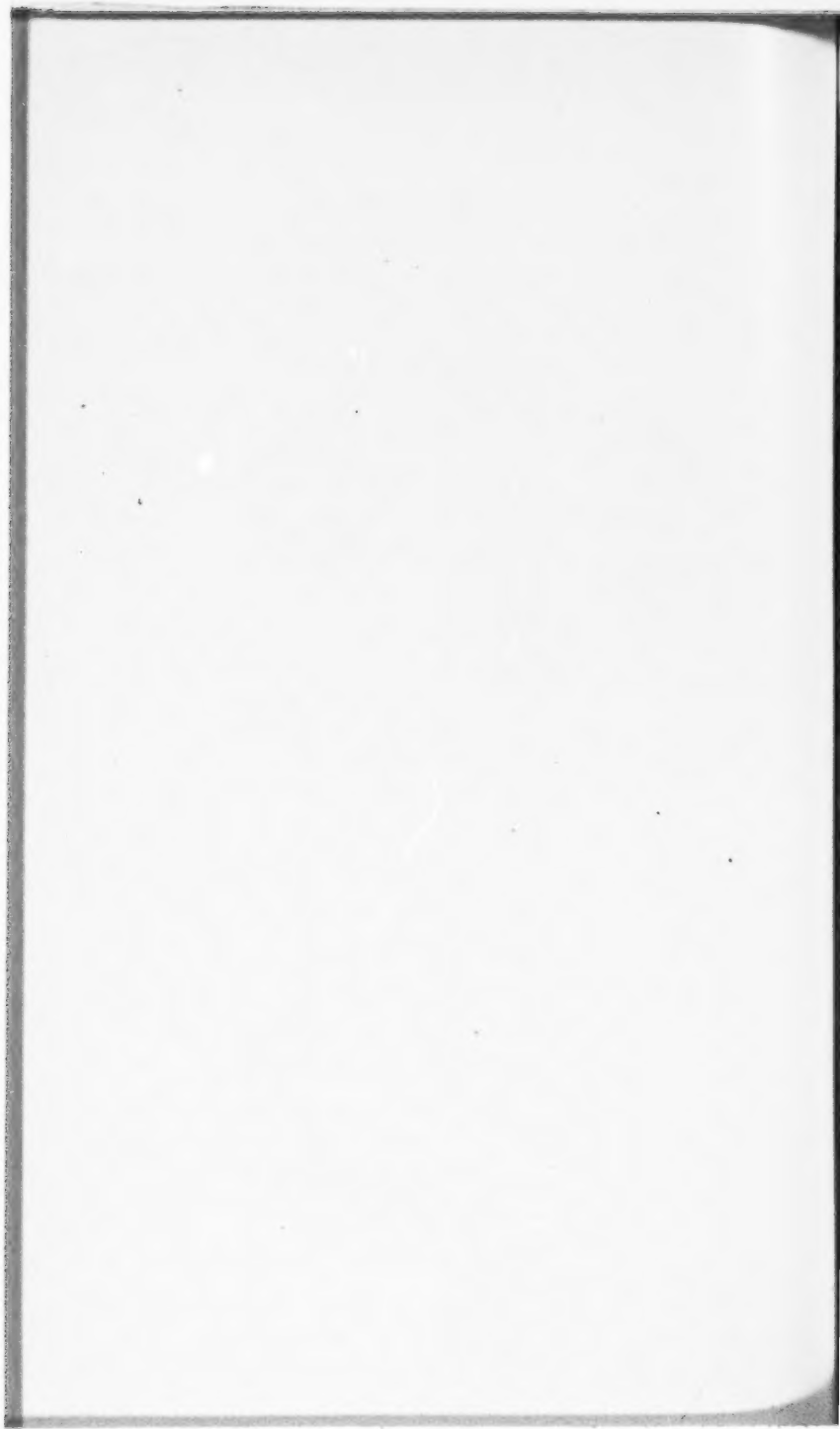
COMPUTING SCALE.

No. 579,550. Patented Mar. 23, 1897.



Witnesses:
Walter E. Lashard
J. Drummond.

Inventor:
Horace E. Swift,
by Emery Simmons
Attys



section of the price-computing mechanism, controlling member, and means for changing the form of the latter in accordance with the unit price. Fig. 4 is a transverse sectional view on the line x' x', Fig. 3, of the locking mechanism for the controlling member; and Fig. 5 is a longitudinal sectional detail of the locking mechanism with the releasing device omitted.

Referring to Fig. 1, the scale-base A, having the beam-supporting standard A′ provided with suitable bearings a for the knife-edge journals b^x of the beam B, the support B′ for the article to be weighed, mounted on the beam, and the counterbalance W may be and are all as common in so-called "beam" or "counter" scales. I have herein shown the free arm of the beam B as composed of two separated rigid bars b' and b^2 in different vertical and horizontal planes, secured at their ends to holders b^3 b^4, said bars constituting tracks or guides for a poise C, longitudinally movable thereon. The bar b', as herein shown, has its outer face graduated in the direction of its length to indicate pounds, and fractions thereof, a pointer or finger c on the poise C coöperating with said graduations to indicate the weight of the article by the position of the poise.

As shown best in Figs. 2 and 3, the poise C has a cylindrical portion c' between the bars b' b^2, and mounted rotatably in the end c^2 thereof is the hollow hub d' of a bevel-gear d, said gear being retained in place in its bearing by a suitable annulus d^x, Fig. 3. The outer end d^2 of the hub d' is shown as slotted diametrically, Figs. 2 and 3, for the purpose to be described, the gear d within the part c of the poise having its teeth in engagement with a bevel-pinion e, fast on the inner end of a spindle e', extended through a boss c^3 of the part c, a collar e^2 on the outer end of the stud retaining it in place.

For greater convenience of observation, as will be apparent, the top of the poise is inclined, as best shown in Fig. 2, to receive thereon a dial-plate f, preferably inclosed by a casing f' and a cover f^2, of glass or other transparent material.

The spindle e' projects through the center of the dial and has fast thereto a hand or pointer E, movable around a series of graduations on the dial, (partially shown in Fig. 1), indicating
158 dollars and fractions thereof or any other desired unit of value.

Obviously rotation of the pointer E by means of the pinion e and gear d will indicate upon the dial f an amount of money corresponding to the extent of such rotation, the said gear-pinion, dial, and pointer constituting price-computing mechanism.

I have herein shown the controlling member of the scale as a thin perferably resilient strip or ribbon h, of metal, preferably tempered steel, attached at one end to a plug h', rigidly secured from longitudinal or rotative movement in a boss b^{3x} of the holder b^3 (see Fig. 3) by a pin 20 or in other desirable manner, the other end of the controlling member h being mounted in a rotatable manner, to be described, said member passing through the diametrical slot in the gear-hub d'. The other end of the controlling member h is secured to a spindle h^2, rotatable in a bearing b^{4x} in the holder

b^4 and provided with a toothed or notched locking-disk h^3. Said bearing has a laterally-extended head b^5, provided with an annular outwardly-turned flange or lip b^6, Figs. 1 and 3, to receive therein the circular wall or bevel m' of a preferably milled nut m, loose on the spindle h^2, the hub m' of the nut being retained in place by a suitable cap h^4, secured to the outer end of the spindle. The nut m and disk h^3 are connected to rotate in unison by a pin or stud 30 on one entering a hole in the other, permitting movement of the nut toward and from the disk. A detent, herein shown as a spring s secured to the bearing b^{4x}, has an upturned lug s', adapted to enter one or other of the notches of the disk h^3 to prevent its rotation, and consequently the rotation of the spindle h^2, said spring being in the path of the wall m' of the nut, so that when the latter is moved inward the detent will be withdrawn from engagement and release the disk h^3, rotation of the nut thereafter in either direction rotating the spindle h^2.

In order to keep the controlling member h under tension, I interpose a spring-washer S between the bearing b^{4x} and the disk h^3, as herein shown, said spring being shown best in Fig. 4 as triangular in shape.

The barrel m' of the nut m is graduated externally, as at M, Fig. 1, and herein shown as having fifty equal divisions, to denote the unit price of the article, an index M' on the exterior of the flange b^6 coöperating therewith, the nut acting as a unit-price-selecting device.

Now when the price-selecting device is set at zero the controlling member h will be maintained as a flat strip or band, and the poise C may be moved along the beam B to any point without any operation of the computing mechanism, and articles can be weighed in the usual manner as with an ordinary beam-scale. If, however, the price-selecting nut m be moved ever so little from zero position, the form of the controlling member h will be proportionally changed, the said member being twisted, as herein shown, into a helix or spiral whose pitch is uniform throughout its length, the pitch depending upon the amount of rotation of the price-selecting device. Such change in form of the controlling member being effected, any movement of the poise C along the beam will, through the rotation imparted to the actuating-gear d by the spiral trend of the controlling member, operate the computing mechanism proportionally to the variation of form of the controlling member from the normal, such proportional movement being determined by the pitch of the helix. Accordingly when the aggregate price of an article is desired corresponding to a given unit price the price-selecting nut m is pressed in by the operator, either before or after the poise has been positioned, to release the disk h^3, and then turned until the proper unit price denoted on the graduation M is opposite the index M', and thereafter the said nut is released to lock the disk h^3 and thereby the controlling member h, as described. The weight of the article, which is placed upon the platform B', is then determined by the positioning of the poise, and the computing mechanism will,

by its hand E and graduated dial *f*, indicate the aggregate or computed price of such article according to the unit price selected. The resiliency of the controlling member *h* tends to return it to normal position when released and also insures absolute uniformity of pitch throughout its length when its normal form has been changed.

As will be evident, the parts of the computing mechanism are so few in number that but little friction has to be overcome, and the operation of the said mechanism is very positive and exact, whether the weight of the article or the unit price thereof be small or large.

The poise C is preferably provided with a finger-piece C^x to facilitate its positioning by the operator.

By adjusting the counterbalance of the beam it will be obvious that the computing mechanism as a whole may comprise the poise, or the poise proper may support a price-computing mechanism, as herein shown.

While I have herein shown my invention embodied in a beam-scale, it will be obvious that my invention is not restricted thereto, for other forms of computing-scale may be made embodying and operating in accordance with the principle herein set forth.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a computing-scale, weighing mechanism, price-computing mechanism; and a separate controlling member to determine by its form the operation of the computing mechanism, substantially as described.

2. In a computing-scale, weighing mechanism, price-computing mechanism; a controlling member to determine by its form
159 the operation of the computing mechanism, and a unit-price-selecting device to govern the form of the controlling member, substantially as described.

3. In a computing-scale, weighing mechanism; price-computing mechanism; a resilient controlling member adapted to determine by its change of form the operation of the price-computing mechanism, and means to retain said controlling member in a predetermined form, substantially as described.

4. In a computing-scale, weighing mechanism; price-computing mechanism; and a flexible controlling member to determine the operation of said computing mechanism by flexure of the controlling member in accordance with the unit price, substantially as described.

5. In a computing-scale, weighing mechanism; price-computing mechanism actuated by operation of the weighing mechanism, a resilient metallic controlling member adapted to be varied in form to determine the operation of the computing mechanism, and a manually-operated price-selecting device to vary the form of said controlling member, substantially as described.

6. In a computing-scale, weighing mechanism including a member positioned according to the weight of the article; price-computing mechanism actuated by movement of said member, and a controlling member to determine by its change of form the operation of the price-computing mechanism, substantially as described.

7. In a computing-scale, weighing mechanism including a mem-

ber positioned according to the weight of the article; price-computing mechanism carried thereby; a controlling member in continuous engagement with the computing mechanism, to determine by its form the operation of said mechanism, and means to change the form of said controlling member in acordance with the unit price, substantially as described.

8. In a computing-scale, weighing mechanism, including a member positioned according to the weight of the article; price-computing mechanism carried thereby; a resilient controlling member in engagement with said computing mechanism, and means to impart spiral twist to said controlling member varied in pitch in accordance with the unit price, to determine the operation of the computing mechanism, substantially as described.

9. In a computing-scale, weighing mechanism; price-computing mechanism, including a rotatable member; a resilient controlling member in engagement therewith, and means to impart spiral twist to said controlling member in accordance with the unit price, relative movement of said rotatable controlling members in the direction of the length of the latter determining the operation of the computing mechanism, substantially as described.

10. In a computing-scale, weighing mechanism, including a beam and a poise movable thereon; price-computing mechanism carried by said poise; a controlling member supported by the beam, and means to change the form of said member in accordance with the unit price, to determine the operation of the computing mechanism, substantially as described.

11. In a computing beam-scale, a beam; a poise movable thereon; a resilient metallic controlling member supported by said beam and rigidly held at one end thereof; means to twist said c 'rolling member in accordance with the unit price of the article weighed, and price-computing mechanism bodily movable in unison with the poise and in continuous engagement with and having its operation determined by the change in form of the controlling member, substantially as described.

12. In a computing beam-scale, a beam; price-computing mechanism bodily movable thereon; a thin metallic strip supported by the beam and rigidly held at one end constituting a controlling member; manually-operated means to twist said strip in the direction of its length, and to retain it in twisted form, and a device to maintain the controlling member under tension, the pitch of the spiral of said member determining the operation of the computing mechanism when moved bodily on the beam, substantially as described.

13. In a computing-scale, weighing mechanism; computing mechanism bodily movable according to the weight of the article; a resilient, flexible controlling member in engagement with and adjacent the path of bodily movement of said computing mechanism, and means to twist said controlling member to thereby determine the operation of the computing mechanism, the pitch of the spiral varying according to the unit price, substantially as described.

14. In a computing-scale, a beam; price-computing mechanism thereon, a resilient, flexible controlling member also supported by

the beam and in engagement with said mechanism, to determine by its form the operation of the latter, and means to change the form of said member in accordance with the unit price of the article, said computing mechanism and controlling member being relatively movable in the direction of the length of the latter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HORACE E. SWIFT.

Witnesses:
JOHN C. EDWARDS.
FREDERICK L. EMERY.

162 UNITED STATES PATENT OFFICE.

JAMES EUGENE DUNCAN, of Centralia, Wisconsin.

Computing-Scale.

Specification Forming Part of Letters Patent No. 597,607, Dated January 18, 1898.

Application Filed May 26, 1897. Serial No. 638,297. (No Model.)

To all whom it may concern:

Be it known that I, James Eugene Duncan, a citizen of the United States, residing at Centralia, in the county of Wood and State of Wisconsin, have invented a new and useful Computing-Scale, of which the following is a specification.

My invention relates to computing-scales, the computing mechanism being adapted for use in connection with that class of scales wherein beams are employed; and the object in view is to provide a simple and compact construction and arrangement of parts whereby an extended range of rate marks or characters and relative-value indicators may be employed.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

(Here follow diagrams marked pp. 160 & 161.)

In the drawings, Figure 1 is a view of a scale-beam computing apparatus constructed in accordance with my invention. Fig. 2 is a similar view showing a different arrangement of the poise. Fig. 3 is a similar view showing the arrangement of parts when the apparatus is used to determine the quantity or weight of a given substance or article of merchandise when the rate per unit of weight and the value for the amount desired are known. Fig. 4 is a diagram showing the superficial divisions and characters of one of the value-indicating devices. Fig. 5 is a transverse vertical section of the computing apparatus on the line 5 5 of Fig. 3. Fig. 6 is a detail longitudinal section of the poise and the contiguous portion of the feed-screw.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In the drawings I have shown one embodiment of my invention wherein for convenience of illustration the weight-indicating devices are of sufficient extent to weigh only four pounds, while the rate-indicating devices extend to eight cents per unit of weight; and, furthermore, for the purposes of illustration I have deemed it sufficient to show only two value-indicating devices, with the means for communicating simultaneous motion thereto from the poise which

No. 175.

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(No Model.) 2 Sheets—Sheet 1.

J. E. DUNCAN.

COMPUTING SCALE.

No. 597,607. Patented Jan. 18, 1898.

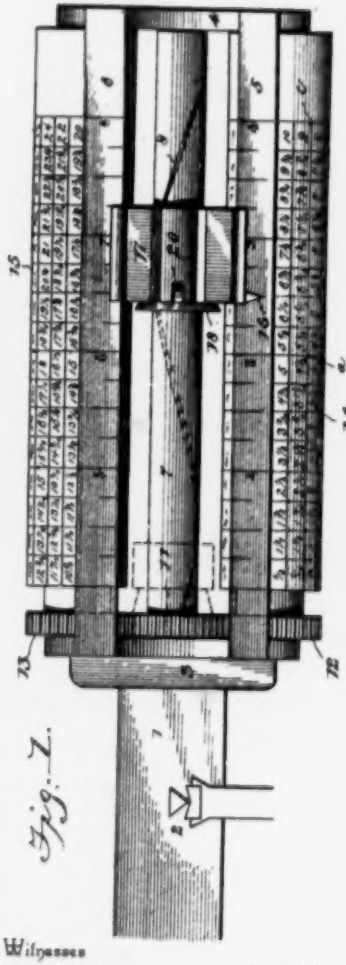

Fig. 1.

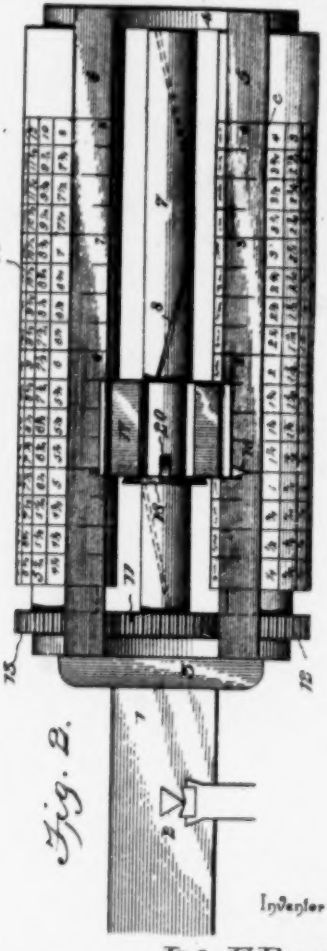

Fig. 2.

Witnesses

E. F. Mann

C. E. Hoyt

Inventor

Jas. E. Duncan

By his Attorneys,

C. A. Snow & Co.

No. 175.

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(No Model.) 2 Sheets—Sheet 2.

J. E. DUNCAN.

COMPUTING SCALE.

No. 597,607. Patented Jan. 18, 1898.

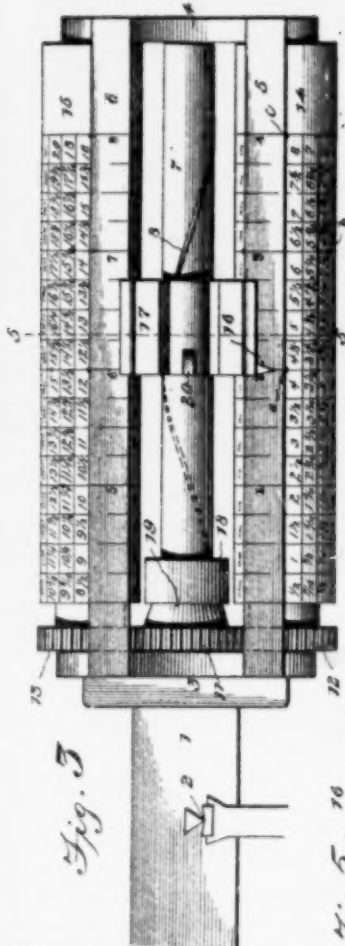

Fig. 3

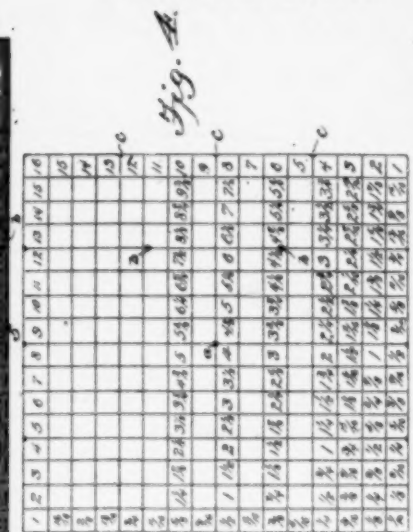

Fig. 4

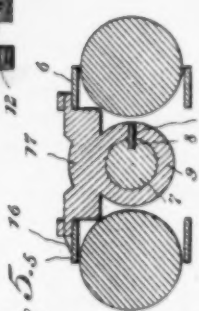

Fig. 5

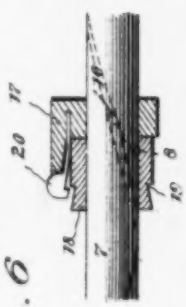

Fig. 6

Witnesses

By his Attorneys, Jas. E. Duncan

C. A. Snow & Co.

carries a pointer to traverse the weight-indicator; but it will be understood that the scope and number of the indicators may be extended upon the lines disclosed in the drawings and in the following description and that various other changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Referring to the drawings, 1 designates a scale-beam fulcrumed at 2 and carrying by means of suitable terminal brackets 3 and 4 a plurality of parallel rate-indicators 5 and 6, consisting of bars divided linearly to form units of rate or price per unit of weight or quantity, each main or unit division being subdivided to form fractional rate divisions. In the construction illustrated the lower or main rate-bar 5 is divided to form unit divisions numbered consecutively from "1" to "4," while the auxiliary rate-indicating bar 6, which is preferably arranged above the main rate-indicating bar, is divided to form an equal number of divisions numbered in continuation of the series on the main or lower rate-bar, or from "5" to "8," inclusive, the several divisions or graduations of the auxiliary rate-bar being arranged, respectively, above the divisions or graduations of the main rate-bar. Furthermore, the main divisions of the auxiliary rate-bar are subdivided to correspond with the subdivisions of the main rate-bar. In the drawings each main division is divided into four equal parts to represent halves and quarters of the unit adopted as the unit of rate. Assuming that the unit of rate is one cent, it will be seen that the graduations of the lower or main rate-bar range from one-fourth of a cent to four cents, while the graduations of the auxiliary bar illustrated range from four and one-fourth to eight cents. The main rate-bar is also designed to form the additional function of a weight-indicator traversed by a poise, which is held in place by means of a feed-screw 7, said screw being provided with a spiral groove 8, which makes one complete circuit of the screw while traversing the same longitudinally from a point opposite one end of the graduations of the rate-bar to the other end of the graduations of said bars. The ring or slide 9 of the poise is provided with a feather or pin 10, which engages the groove 8, whereby as
163 the poise is moved longitudinally or parallel with the rate-bars rotary motion is imparted to the feed-screw and said feed-screw by reason of the above-mentioned specific arrangement of the groove makes one complete revolution while the poise traverses the main rate-bar from one end of its graduated portion to the other. The feed-screw is journaled in the terminal brackets 3 and 4 and at one end carries a gear 11, which meshes with corresponding gears 12 and 13 on value-indicating devices 14 and 15, also journaled in said terminal brackets, these value-indicating devices being arranged respectively, contiguous to the rate-bars and axially parallel therewith with the front lines of their surface contiguous to the indicating edges of the rate-bars, the indicating edge of the lower bar being its lower edge while the indicating edge of the upper bar is its upper edge. Hence as the poise is moved parallel with the rate-bars and communicates rotary motion to the feed-screw a corresponding ro-

tary motion is imparted to both of the value-indicators, whereby all points of the circumference of each roll or cylinder (in which form the value-indicators are constructed) are brought under the indicating edge of the contiguous rate-bar.

In Fig. 4 I have shown a diagram illustrating the system of graduating the surfaces of the value-indicators, and referring thereto it will be seen that it is superficially divided by longitudinal and transverse lines to form spaces containing the graduations representing values. The transverse columns register, respectively, with the graduations of the rate-bar, while the longitudinal columns are adapted to be brought successively into contiguity with the indicating edge of the rate-bar. Inasmuch as the unit divisions of the rate-bars are divided into quarters, the lowest graduation on the value-indicator must be one-sixteenth, or the square of one-fourth, for the reason that it must indicate the value of one-fourth of a pound of an article worth one-fourth of a cent a pound. Progressing from this initial point in the transverse column which operates in the plane of the first subdivision of the rate-bar, the graduations must increase successively by the value of the first graduation, or one-sixteenth, for each step. Hence observe that in the first column on the lower value-indicator 14 (which is the one illustrated in Fig. 4) the graduations will read "$\frac{1}{16}$," "⅛," "$\frac{3}{16}$," "¼," and so on continuously to "1." Obviously the maximum value-character in this column will be one-fourth of the maximum rate-character on the lower or main rate-bar 5. The remaining transverse columns of the value-indicator—namely, those arranged, respectively, in registration with the several divisions of the rate-bars—have their characters arranged to increase according to the number found in the longitudinal column of the initial graduation. For instance, in the transverse column of which "⅛" forms the initial character the values increase at each step by one-eighth, as one-eighth, one-fourth, three-eighths, one-half, &c. In the transverse column of which "$\frac{3}{16}$" forms the initial character the values increase by three-sixteenths at each step, as three-sixteenths, three-eighths, nine-sixteenths, three-fourths, &c. In the transverse column of which "¾" is the initial character the values increase by three-fourths at each step, as three-fourths, one and one-half, two and one-fourth, &c., and in the transverse column of which "1" forms the initial character the values increase by one at each step, as one, two, three, &c. This progression brings the character "16" in the terminal or maximum space in the transverse column which is in registration with the terminal division "4" of the main rate-bar 5, whereby the value (or sixteen cents) of four pounds of an article of which the rate is four cents a pound may be indicated. The system of graduation as above indicated is carried out on the auxiliary value-indicator and may be extended to additional auxiliary indicators to the desired number.

With the parts constructed as above described it will be understood that one complete revolution of each value-indicator is caused during the movement of the poise from its initial or innermost to its terminal or outermost point on the main rate-bar, which constitutes the weight-indicator, and that when the poise is located at any given

main or subdivision of the main rate-bar the several values of articles of the weight indicated by the poise and at rates ranging from one-fourth of a cent per pound to eight cents per pound will be exposed contiguous to the indicating edges of the rate-bars and in registration, respectively, with those graduations of the rate-bars which indicate the several rates. For instance, referring to Fig. 2, wherein the poise is located to indicate one pound in weight, it will be seen that in the column corresponding with column "1" of the rate-bar 5 is found the value-character "1," thus indicating that one pound of an article worth one cent per pound is one cent. If the value of the article is three cents per pound, the numeral "3" will be found in the column on the value-indicator or computing-cylinder in alinement with the rate-character "3" of the rate-bar 5. If the value of the article is four and one-half cents per pound, the value-character "4½" will be found in the column "4½" of the rate-bar 6. In the same way if the poise is arranged to indicate two and one-half pounds, as shown in Fig. 1, the value of two and one-half pounds of an article worth two and one-half cents per pound will be found on the computing-cylinder in the column registering with the column "2½" of the rate-bar 5, or six and one-fourth. If the value of the article is seven and one-half cents a pound, the value of two and one-half pounds thereof will be found in the column of the computing-cylinder 15 which is arranged in registration with the column "7½" of the rate-bar 6, or eighteen and three-fourths.

164 It will be understood that for each movement of the poise through a distance corresponding with one graduation, or one-fourth of a unit of the rate-indicators, the computing-cylinders rotate sufficiently to bring the succeeding longitudinal columns of value-characters contiguous to the indicating edges of the rate-bars. For instance, assuming that the poise is in the position shown in Fig. 2, with its pointer 16 on the graduation "1" of the rate-bar, the movement of said poise to the succeeding graduation-subdivision "¼" of the rate-bar will turn the computing-cylinder 14 to bring the succeeding longitudinal column in place of the one shown in Fig. 2, whereby the lowest graduation of the then exposed longitudinal column will be "3/16," and hence the graduation "¾" will be in registration with the column "1" of the rate-bar 5 and the graduation "3" of the computing-cylinder will be in registration with the column "4" of said rate-bar.

The poise which I prefer to employ in connection with the computing mechanism above described is of sectional construction, the body portion 17 thereof carrying the pointer 16 and the auxiliary detachable member 18 being fitted to slide upon the feed-screw and being constructed for engagement by locking devices, whereby the two members may be secured together for simultaneous movement with the axis of the feed-screw. In the construction illustrated the auxiliary or detachable member is provided with an annular groove 19 for engagement by a catch 20, mounted upon the main or body portion of the poise and adapted to be depressed terminally by the operator during the movement of the poise from one point to another when it is desired to move both members simultaneously.

When it is desired to move the main or body portion of the poise independently of the auxiliary or detachable portion, the catch is allowed to remain out of engagement with the auxiliary member by avoiding the application of pressure thereto.

When the main member of the poise is used independently of the auxiliary or detachable member, the latter being left in the initial position contiguous to the inner ends of the rate-bars, as shown in Fig. 3, the movement of the main member from its initial point to the outer ends of the rate-bars is adapted to indicate a weight of one pound, and hence the movement thereof for a distance equal to one-half the length of the rate-bars will indicate a weight of one-half pound.

Inasmuch as the computing-cylinders make one complete revolution for each movement of the poise through a distance equal to the length of the graduated portions of the rate-bars it is obvious that any movement of the poise through a less distance will be accompanied by a corresponding and proportionate rotation of the computing-cylinders. I utilize this fact in adapting the mechanism for indicating the weight of an article of which the rate per pound and the value are known—as, for instance, when so many cents' worth of a given article of which the rate is so much per pound. To accomplish this, each computing-cylinder is divided circumferentially in the planes, respectively, of the graduations on the rate-bars to form a number of divisions corresponding with the character in the registering column of each rate-bar. For instance, the cylinder 14 is divided in the plane of the column containing the graduation "2" of the rate-bar to form diametrically opposite points or dots *a*, (see Fig. 4,) while in the plane of the graduation "3" the cylinder is divided circumferentially into thirds, (indicated by the points or dots *b*,) while in the plane of the column "4" of the rate-bar the surface of the cylinder is divided into fourths, (indicated by the points or dots *c*.) Hence with both members of the poise in their initial position (indicated in dotted lines in Fig. 1) the movement of the main member 17 to the point indicated in full lines in Fig. 3 or to the column "2" of the rate-bar will cause the cylinders to make a one-half revolution and thus bring the dot arranged in the plane of said graduation to a point under the indicating edge of the rate-bar 5. Suppose, therefore, that a customer asks for one cent's worth of an article sold at two cents per pound. The movement of the main member of the poise until the point or dot *a* is in the plane of the rate-bar edge will indicate the position which the poise member must occupy in order to weigh one cent's worth of said article sold at two cents per pound. If the demand is for one cent's worth of an article worth four cents a pound, the poise is moved, as above indicated, until the first point or dot *c* in the column "4" of the rate-bar comes under the indicating edge of said rate-bar, and in the same way if one cent's worth of an article worth eight cents per pound is demanded the poise should be moved from its initial position toward the outer end of the rate-bars until the first point or dot on the computing-cylinder 15 in the plane of the rate-character "8" comes under the edge of the rate-bar 6.

The movement of the poise is checked when the desired point or dot of the computing-cylinder is brought under the indicating edge of the rate-bar and thus indicates the desired weight. With the poise in the position indicated in Fig. 3 it will be seen that the points or dots in the columns "2," "4," "6," and "8" are under the indicating edges of the rate-bars; but while the poise is moved from its initial position to that indicated in Fig. 3 two points or dots in the column registering with the column "4" of the rate-bar 5 have passed under the indicating edge of said rate-bar, three points or dots in the column "6" have passed under the indicating edge of the rate-bar 6, and four points or dots in the column "8" have passed under the indicating edge of said bar. Hence the position of the poise in Fig. 3 indicates the weight of one cent's worth of an article worth two cents per pound, two cents' worth of an article worth four cents per pound, three cents' worth of an article worth six cents per pound, and four cents' worth of an article worth eight cents per pound.

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The advantage of the double arrangement of cylinders or the duplication of the same resides in the fact that with a scale-beam of a given length a greater number of rate-graduations may be employed, and hence articles having a greater range of prices can be read thereon without losing the advantages of the price-computing means. In other words, with a single cylinder of the range illustrated in the drawings the highest rate per pound which can be computed is four cents, whereas by doubling the computing-cylinder, without increasing the length of the scale-beam, articles ranging in price up to eight cents per pound can be read, and, furthermore, this duplication of the computing-cylinder is accomplished without materially complicating the construction of the device, owing to the fact that one of the rate-indicators is utilized as a weight-indicator, thus dispensing with an auxiliary or special weight-indicator. The disadvantage of employing a long scale-beam is that as the poise is moved toward the outer end of the beam or from the pivot the graduations will necessarily be placed so close together as to render the operation of the apparatus difficult. By shortening the scale-beam and employing a plurality of computing-cylinders and rate-bars this disadvantage of reducing the distances between the graduations is overcome, and the disadvantage of reducing the intervals between the graduations is of special advantage when the device is constructed to weigh articles of which the rate is expressed in the fractional parts of a unit, as two and one-fourth, three and one-half, one and three-fourths, &c., cents per pound.

Having described my invention, what I claim is—

1. The combination with a scale-beam, of a computing-cylinder, superficially provided with circumferential columns of value-characters, a rate-indicator arranged contiguous to the cylinder and provided with columns registering with those on the cylinder, and having characters indicating rates per unit of weight, a poise traversing said rate-indicator and referring to the graduations thereof to indicate weights, and connections between the poise and cylinder,

whereby rotary motion is imparted to the latter, substantially as specified.

2. The combination with a scale-beam, of a computing-cylinder, superficially provided with circumferential columns of value-characters, a rate-indicator arranged contiguous to the cylinder and provided with columns registering with those on the cylinder, and having characters indicating rates per unit of weight, said cylinder being circumferentially divided, in the planes of the columns of the rate-bar, into a number of divisions corresponding respectively with the characters designating said columns of the rate-bar, a sectional poise traversing a weight-indicator, and capable of movement either in whole or in part, and operating connections between one member of the poise and the cylinder, for imparting rotary motion to the latter, substantially as specified.

3. The combination with a scale-beam, of a computing-cylinder, superficially provided with circumferential columns of value-characters, a rate-indicator arranged contiguous to the cylinder and provided with columns registering with those on the cylinder, and having characters indicating rates per unit of weight, said cylinder being circumferentially divided, in the planes of the columns of the rate-bar, into a number of divisions corresponding respectively with the characters designating said columns of the rate-bar, a sectional poise traversing a weight-indicator, and comprising main and auxiliary members, of which the former is capable of movement independently of the latter, a locking device for securing the poise members together, and operating connections between the main poise member and the cylinder, substantially as specified.

4. The combination with a scale-beam, of a computing-cylinder, superficially provided with circumferential columns of value-characters, a rate-indicator arranged contiguous to the cylinder and provided with columns registering with those on the cylinder, and having characters indicating rates per unit of weight, said cylinder being circumferentially divided, in the planes of the columns of the rate-bar, into a number of divisions corresponding respectively with the characters designating said columns of the rate-bar, a sectional poise traversing a weight-indicator, and comprising main and auxiliary members, of which the former is movable independently of, and is recessed to receive, the latter, a yielding catch on the main member to engage a depression in the auxiliary member, and normally held out of engagement therewith, and operating connections between the main poise member and the cylinder, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES EUGENE DUNCAN.

Witnesses:
WILLIAM A. PERSO.
JAMES W. NATWICK.

No. 175.

Comp. Scale Co. v Aut-Scale CQ p. 166

(No Model.) 2 Sheets—Sheet 1.

C. F. & C. K. CHRISTOPHER.

READY CALCULATOR.

No. 588,128. Patented Aug. 17, 1897.

FIG. 1.

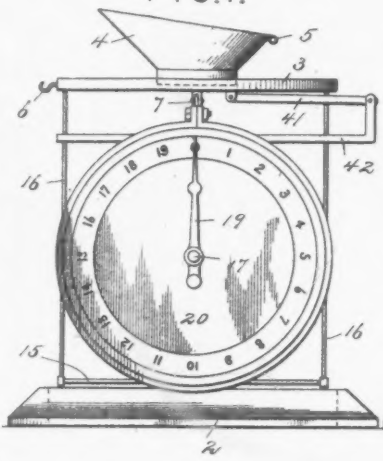


FIG. 4.

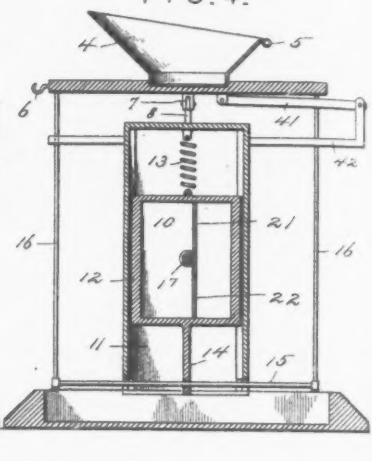
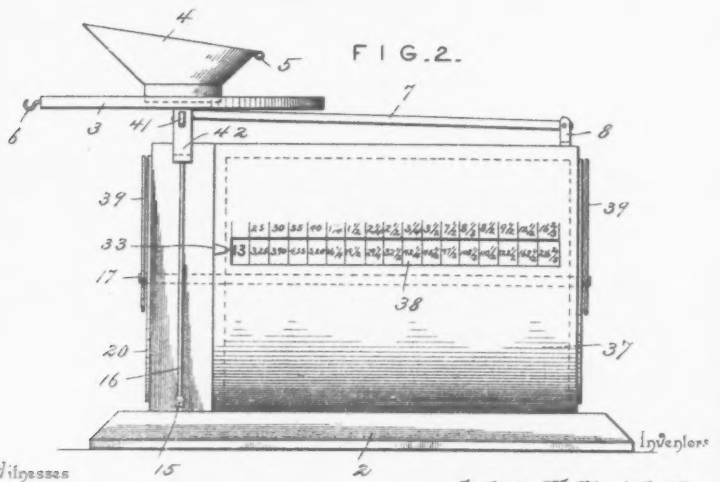


FIG. 2.



Witnesses

Harry L. Ames.

U. S. Hillyard.

Inventors

Calvin F. Christopher

Colonel K. Christopher.

By their Attorneys, C. A. Snow & Co.

No. 175.

Comp. Scale Co. v Aut-Scale Co. } p. 167

(No Model.) 2 Sheets—Sheet 2.

C. F. & C. K. CHRISTOPHER.

READY CALCULATOR.

No. 588,128. Patented Aug. 17, 1897.

FIG. 3.

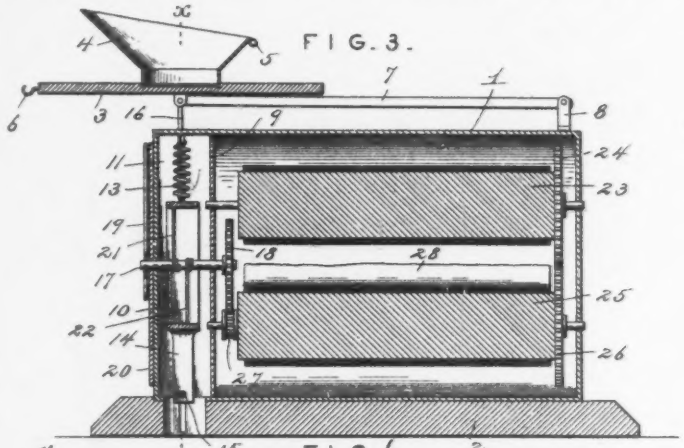


FIG. 6.

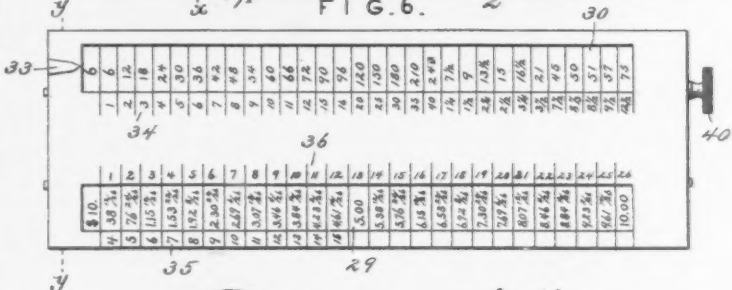


FIG. 7.

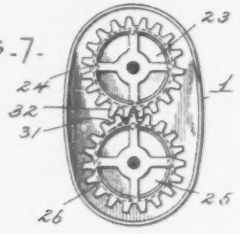
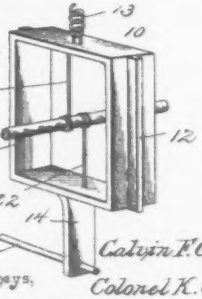


FIG. 5.



Witnesses

Harry L. Amer.

V. B. Hillyard.

Inventors

Calvin F. Christopher and Colonel K. Christopher

By their Attorneys,

C. A. Snow & Co.

168 UNITED STATES PATENT OFFICE.

CALVIN F. CHRISTOPHER and COLONEL K. CHRISTOPHER, of Spartanburg, South Carolina.

Ready Calculator.

Specification Forming Part of Letters Patent No. 588,128, Dated August 17, 1897.

Application Filed January 16, 1896. Serial No. 575,777. (No Model.)

To all whom it may concern:

Be it known that we, Calvin F. Christopher and Colonel K. Christopher, citizens of the United States, residing at Spartanburg, in the county of Spartanburg and State of South Carolina, have invented a new and useful Improvement in Ready Calculators, of which the following is a specification.

This invention relates to calculating devices for indicating the required amount or product of numbers, whereby interest at any rate and for any length of time, labor, commodities, &c., can be quickly determined without any mental effort or the exercise of manual energy.

The calculator is portable and can be made of such dimensions as to be carried in the pocket, or can be combined with a pair of weighing-scales to be operated automatically, so that the mass and the value of the same at a given rate can be read off.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

(Here follow diagrams marked pp. 166 & 167.)

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is an end view of a pair of weighing-scales equipped with the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal section showing a different arrangement of the parts. Fig. 4 is a section on the line X X of Fig. 3, looking to the right. Fig. 5 is a detail view of the movable frame, showing the relation of the pointer-supporting shaft and the actuating devices therefor. Fig. 6 is a top plan view of the calculator detached from the weighing mechanism and appearing as it will be constructed for carrying in the pocket. Fig. 7 is a section on the line Y Y of Fig. 6.

Corresponding and like parts will be designated and referred to

in the following description and all the figures of the accompanying drawings by similar reference-characters.

A casing 1 is mounted upon a platform 2 and incloses the operating parts of the calculator and the weighing mechanism and may be constructed of metal or any other material suitable for the purpose and will have a shape to conform to the parts inclosed thereby. A base 3, receives the commodity to be weighed and supports a scoop 4, in which such substances as sugar, coffee, &c., are placed to be weighed.

When it is required to weigh articles which can be placed directly upon the base 3, the scoop is removed, and in order to preserve the balance of the weighing apparatus the said scoop is suspended from the base 3, being provided with an eye 5 to engage with a hook 6 at the end of the base for the purpose. A bar 7 connects the base 3 with a stud 8, having connection with the casing, and the purpose of the bar 7 is to steady the base in its vertical movements attendant upon the weighing of articles. A partition 9 divides the casing so as to form a compartment at one end to receive the weighing mechanism and to form a support for the inner ends of the several shafts. A frame 10 is placed in the compartment 11 and is adapted to reciprocate vertically therein, being provided at its sides with vertical ribs 12, which operate in ways in the sides of the casing, so as to give proper direction to the frame in its reciprocating movements. A properly-tempered spring 13 connects the top of the frame 10 with the upper portion of the casing and serves to hold and to return the frame to a normal position. An extension 14 is pendent from the lower side of the frame 10, and through this extension passes a rod 15, which connects at its outer extremities with the lower ends of vertical rods 16 at the sides of the casing, and which rods 16 have attachment at their upper ends with the base 3. Thus it will be seen that any downward movement of the base 3 will cause a corresponding depression of the frame 10 by reason of the connections just described.

A shaft 17 is journaled in the partition 9 and the adjacent head or end of the casing and is provided at its inner end with a gear-wheel 18 and at its outer end with a pointer 19, which coöperates
169 with proper graduations on a dial 20, so as to indicate correctly the mass or weight of the article or commodity placed either upon the base 3 or in the weighing-scoop 4. A cord or tape 21 is connected at its upper end with the top portion of the frame 10, and its lower end portion is wound around the shaft 17 and is connected therewith, and a companion cord 22 is secured at its lower end to the bottom portion of the frame 10, and its upper end portion is wound around the shaft 17 in a reverse direction to the lower end of the cord 21 and is secured to the said shaft. From this construction and arrangement of the cords or tapes 21 and 22 it will be seen that as the frame 10 reciprocates the shaft 17 will be positively rotated in each direction, and it will be observed that as one cord unwinds from the shaft 17 the other cord will wind thereon, thereby insuring a positive turning of the shaft 17 and the parts 18 and 19 connected therewith.

A roller 23 is journaled in the partition 9 and in the remote end

or head of the casing and is provided with a gear-wheel 24, and a corresponding roller 25 is similarly mounted to the roller 23 and has a gear-wheel 26 at one end, which meshes with the gear-wheel 24, and a pinion 27 at its opposite end, in mesh with the gear-wheel 18, so that a rotation of the shaft 17 will impart a movement to the rollers 23 and 25, as will be readily comprehended. A strip 28 of paper, fabric, or like material is secured at its ends to the rollers 23 and 25 and is adapted to be reversely wound thereon, so that as the strip unwinds from one roller it will wind upon the opposite roller. This strip will have columns of figures upon each side, disposed in parallel lines, so as to indicate the desired results and computations in connection with corresponding numerals or figures at the sides of observation-openings 29 and 30 in the sides of the casing 1.

To prevent and limit the overwinding of the strip upon the rollers, the gear-wheels 24 and 26 are provided with a stop device consisting of a shallow tooth 31 and a long tooth 32 to interlock with the shallow tooth when the two teeth come together, such as commonly provided in a train of gearing to limit the number of revolutions of any required part thereof. A pointer 33 extends into the observation-opening 30, and its purpose is to indicate the correct position of the column of figures coming directly opposite, so that the proper column may be correctly designated in the event of a portion of two columns appearing through the opening.

When preparing and graduating the strip 28, the columns of figures are arranged so as to indicate units and fractional parts thereof, the numerals at the heads of the columns designating the pounds, yards, or other denominate values and the succeeding numerals representing the value when compared with the numerals bordering upon the marginal edge of the opening. For instance, referring to the right-hand column of Fig. 6, it will be seen that the topmost figure is "6," and if the article is represented by pounds a comparison thereof with the column of figures 34 on the left of the opening 30 will show that six pounds at one cent or one dollar a pound will be indicated by a corresponding numeral "6" opposite the numeral "1" in the column 34. Again, suppose the commodity be butter at thirty cents a pound and it be required to ascertain the value. By running down the column 34 until the numeral "30" is reached "180" will be found opposite the said numeral, showing that the value is one dollar and eighty cents. Suppose the article is to be measured. Then "6" will represent the number of yards, and if the price of the goods is thirty cents a yard the same result will be attained. The column of figures to the left hand of Fig. 6 is for indicating interest and wages, the line of figures 35 representing the rate of interest and the column of figures 36 designating the number of days. Suppose a person is earning ten dollars per month having twenty-six work days and it is required to ascertain how much is due for, say, twenty days. By running down the column of figures 36 until "20" is reached the amount seven dollars and sixty-nine cents and a fraction will appear opposite, and is the amount due. Like calculations are determined in a similar way, according to the value and quantity to be reckoned.

In the form shown in Fig. 2 a single roller 37 is employed, and its surface will be graduated similar to the strip 28, and only a single observation-opening 38 will be provided in the casing for the column of figures to be exposed through, and the journals of the roller will extend beyond the ends of the casing and each will have a pointer 39 to coöperate with the adjacent dials at the ends of the casing.

When the calculator is disconnected from the weighing mechanism and is used for ready reckoning, one or the other of the rollers will have its projecting journal provided with a knob 40, to be readily grasped for rotating the rollers so as to bring the required column of figures opposite the observation-openings.

To prevent lateral motion of the base 3, a bar 41 is supplied and is pivotally connected at its inner end to a lug pendent from the base 3 and has pivotal connection at its outer end to the vertical extension of a bracket-arm 42, secured to the casing, and this bracket-arm is extended and is apertured for the passage of the guide-rods 16, so as to direct the latter in their vertical movements. The bars 7 and 41 are free to follow the vertical movements of the base 3, but act jointly to prevent any material lateral play thereof, thereby maintaining the base 3 in proper working relation.

Having thus described the invention, what is claimed as new is—

1. In a combined weighing and calculating mechanism,
170 the combination of a casing having a slot and provided with a line of figures adjacent to the slot, a dial at one end of the casing, a shaft bearing a pointer to coöperate with the dial, a frame reciprocally mounted in the casing adjacent to the dial and guided in its vertical movements, and having the shaft passing therethrough, a weighing base or platform, side rods connecting the weighing-base with the reciprocal frame, a spring interposed between the casing and frame to hold the latter and the weighing-base in a normal position, a roller operated from the aforesaid shaft and bearing a series of columns of figures to be read in connection with the figures bordering upon the slot of the casing, and flexible connections secured at their outer ends to opposite portions of the reciprocating frame and having their inner ends connected with and reversely wound upon the aforesaid shaft, substantially as shown for the purpose described.

2. In a combined weighing and calculating mechanism, the combination of a casing having a longitudinal slot and a line of figures adjacent to the said slot, a weighing-base, means for yieldingly supporting the base, an indicating mechanism actuated by means of the weighing-base, a longitudinal bar pivoted at one end to the casing and having pivotal connection with the weighing-base, a second bar arranged approximately at right angles to the longitudinal bar and having pivotal connection with the casing and with the weighing-base, and a calculating mechanism cooperating with the line of figures bordering upon the said slot of the casing and controlled by the weighing-base, substantially as set forth for the purpose described.

3. In a combined weighing and calculating mechanism, the combination of a casing having a longitudinal slot and a line of figures bordering upon the said slot, a weighing-base, longitudinal and transverse bars pivotally supported at their outer ends and having

pivotal connection with the weighing-base to steady the latter in its vertical movements, a reciprocating frame supporting the weighing-base, a spring for holding the reciprocating frame in a normal position, a dial, a shaft passing through the reciprocating frame and bearing a pointer to coöperate with the dial, flexible connections secured at their outer extremities to the ends of the reciprocating frame and having their inner terminals secured to and reversely wound upon the said shaft, and a roller mounted upon the said shaft and bearing a series of columns of figures to be read in connection with the figures bordering upon the slot of the casing, substantially as set forth.

4. In combination, a calculating mechanism, a shaft in gear with the calculating mechanism and bearing a pointer to coöperate with a suitably-graduated dial, a reciprocating frame having a pendent extension, a spring for returning and maintaining the reciprocating frame at a normal position, a base, a cross and side rods connecting the base with the said pendent extension of the frame, cords or tapes connecting the reciprocating frame with the shaft to positively rotate it in each direction, and a bar having pivotal connection with the base and with a support so as to steady the movements of the said base, substantially in the manner and for the purpose set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

C. F. CHRISTOPHER.
C. K. CHRISTOPHER.

Witnesses:
JOHN H. SIGGERS,
J. C. SHOEMAKER.

173 UNITED STATES PATENT OFFICE.

CALVIN F. CHRISTOPHER, of Washington, District of Columbia, Assignor, by Direct and Mesne Assignments, to the Columbian Automatic Computing Scales Company, of New Jersey.

Price-Scale.

Specification Forming Part of Letters Patent No. 648,609, Dated May 1, 1900.

Application Filed December 9, 1899. Serial No. 739,826. (No Model.)

To all whom it may concern:

Be it known that I, Calvin F. Christopher, a citizen of the United States, residing at Washington, in the District of Columbia, have invented a new and useful Price-Scale, of which the following is a specification.

The invention relates to improvements in price-scales.

The object of the present invention is to improve the construction of price-scales and to provide a simple and comparatively-inexpensive one designed to be mounted for rotation on a counter or other suitable support and capable of simultaneously indicating the weight and price of an article and adapted to be readily rotated, so that the buyer and seller may successively see the price and the weight.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

(Here follow diagrams marked pp. 171 & 172.)

In the drawings, Figure 1 is a perspective view of a price-scale constructed in accordance with this invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a similar view of the upper portion of the scale, taken at right angles to Fig. 2. Fig. 4 is a horizontal sectional view on line 4 4 of Fig. 2. Fig. 5 is a detail view illustrating the manner of mounting the indicator. Fig. 6 is a detailed view illustrating the manner of adjusting the coiled springs.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a circular base having a central opening enlarged at the top and bottom to provide upper and lower ball-races for the reception of upper and lower antifriction-balls 2 and 3, which are interposed between the base and upper and lower cones 4 and 5. The upper cone 4 is rigid with a depending stem 5^a of a rectangular

No. 175.

Comp. Scale Co. v Aut-Scale Co } 6.171

No. 648,609. Patented May 1, 1900.

C. F. CHRISTOPHER.

PRICE SCALE.

(Application filed Dec. 9, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

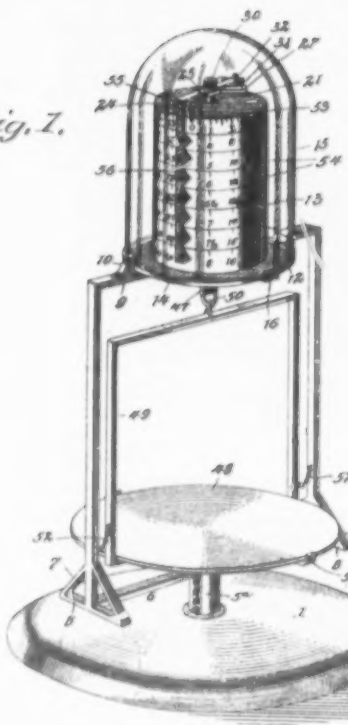


Fig. 6.

Witnesses
Howard P. Dw.
H. J. Riley

Calvin F. Christopher, Inventor.
By his Attorneys,
C. A. Snow & Co.

No. 175.

Comp. Scale Co. v Aut-Scale Co } p 172

No. 648,309. Patented May 1, 1900.

C. F. CHRISTOPHER.

PRICE SCALE.

(Application filed Dec. 9, 1899.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

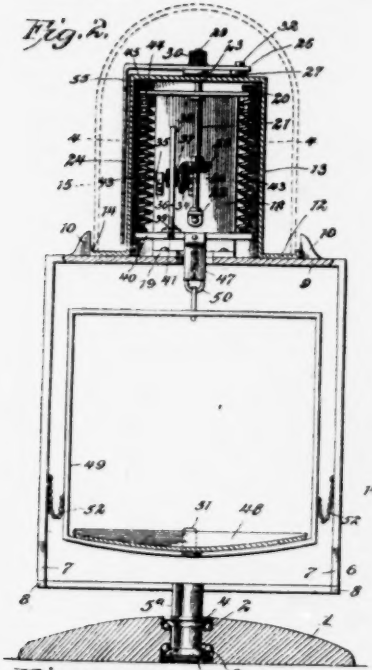


Fig. 3.

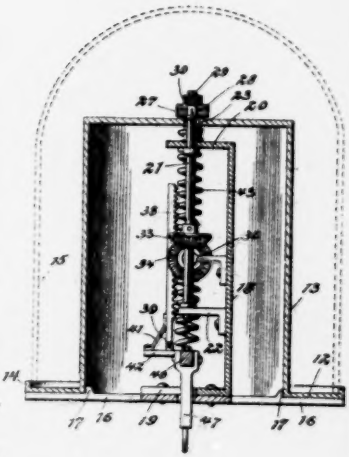


Fig. 4.

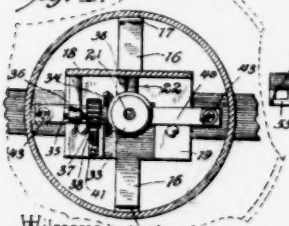
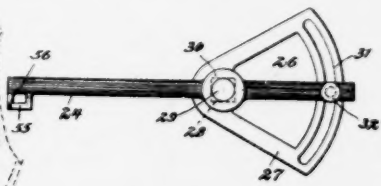


Fig. 5.



Witnesses:

Howard D. Orr.

H. F. Riley

Calvin F. Christopher, Inventor,

By his Attorneys,

C. A. Snow & Co.

frame 6, and the lower cone 5 preferably consists of a nut engaging a threaded portion of the stem 5^a to enable the wear of the parts to be readily taken up. The rectangular frame 6, which may be of any desired construction, is preferably reinforced at the bottom at opposite sides by inclined braces 7 and horizontal extensions 8, and the top 9 of the supporting-frame 6 is provided near its ends with upwardly-extending lugs 10, between which is arranged a horizontal annular flange 12 of a graduated drum or casing 13, and the said flange 12, which is suitably secured to the top of the supporting-frame, is provided with an upwardly-extending rim 14 and is adapted to support a transparent receiver 15, of glass or other suitable material, which protects the scale from dust and prevents any one from tampering with the mechanism. The top of the supporting-frame is also provided with arms 16, extending centrally from it at right angles and provided with lugs 17, located at the upper faces of the arms and arranged at the inner face of the graduated drum or cylinder to support the same. The lugs 10 extend above the rim and support the same and the glass receiver.

Mounted upon the top of the supporting-frame is a centrally-arranged bracket 18, having a bottom flange 19 and provided with a top flange 20, forming a bearing for a central vertical shaft 21, which has its lower end stepped in a suitable bearing 22, extending horizontally from the bracket at an intermediate point. The central vertical shaft extends upward through a central aperture 23 of the top of the drum or casing, and it carries an approximately L-shaped indicator 24, adapted to revolve around the exterior of the drum or casing and extending horizontally over the top of the same and depending at the exterior thereof, as clearly illustrated in Figs. 1 and 2 of the accompanying drawings. The horizontal portion of the indicator is provided between its ends with an opening for the reception of the shaft, and its inner or rear portion 26 constitutes an arm and is adapted to be secured to a sector-shaped frame or plate 27, which is fixed to the shaft. The shaft 21, which is disposed axially with relation to the casing, is provided above the same with a squared portion 28, which fits into a corresponding opening of the sector-shaped frame or plate, and the upper end 29 of the shaft is threaded for the reception of a nut 30. The sector-shaped plate or frame 26 is provided adjacent to its periphery
174 with a curved slot 31, in which is arranged a suitable fastening device 32 for clamping the arm 26 of the indicator at the desired adjustment. The fastening device 32, which may be of any desired construction, preferably consists of a threaded shank or screw passing through the slot 31 and the perforation of the arm 26 and a thumb-nut arranged on the upper portion of the shank or screw and engaging the upper face of the arm. The shank or screw is provided at its lower end with a suitable head to engage the lower face of the plate or frame 27, and by operating the thumb-nut the parts may be secured at any desired adjustment, and this construction will permit the vertical portion of the indicator to be adjusted so that it will register accurately with the graduations of the drum or casing.

The central vertical shaft carries a bevel-pinion 33, which meshes with a vertical bevel-pinion 34 of a horizontal shaft 35, journaled in suitable bearings 36 of the bracket 18 and carrying a spur-pinion 37, which meshes with a pivotally-mounted rack-bar 38. The rack-bar 38, which is pivotally mounted at its lower end 39 on a vertically-movable horizontal bar 40, is held in engagement with the spur gear-wheel 37 by a spring 41, secured at its lower end to an arm 42 of the bar 40 and having its upper end bearing against the back of the rack-bar at a point above the pivot thereof. The horizontal bar has its ends connected with the lower terminals of a pair of coiled springs 43, which are suspended from the bracket which is provided with perforated ears or extensions located at opposite sides of the top flange 20. The perforated ears or flanges 44 of the top flange receive adjusting devices 45, consisting of stems provided with lugs or projections 46 and having a suitable milled head. The lugs or projections 46 are located at different points and are adapted to engage the coils of the spring, the stem of the adjusting device extending into the spring, as clearly illustrated in Fig. 6 of the accompanying drawings. By rotating the adjusting devices it will be apparent that the springs are drawn upward and downward, and by this construction any inaccuracy of the scale resulting from long use of the springs may be readily corrected.

The vertically-movable connecting-bar 40, which carries the rack-bar, is provided with a depending stem or arm 47, extending through an opening of the bottom flange of the back 18 and through a central aperture of the top of the supporting-frame, and it has a scale-pan 48 suspended from it; but any other suitable device, such as a hook or the like, may be employed for receiving the goods to be weighed.

The scale-pan is supported in a frame or hanger 49, provided at its top with a hook which engages a loop 50, depending from the lower end of the stem or arm. The bottom of the frame or hanger 49 consists of curved bars arranged at right angles to each other and conforming to the configuration of the lower convex face of the scale-pan. One of the curved bottom bars connects the sides of the frame 49, and the other is provided with upwardly-extending projections or hooks 51, adapted to engage the opposite edges of a scale-pan, whereby the latter is retained in the frame or hanger. The sides of the hanger 49 are connected with the sides of the supporting frame by chains 52 or other suitable flexible connections, which will prevent the scale-pan and its supporting-hanger from rotating independently of the supporting-frame and twisting the hook out of engagement with the loop 50. When the yieldingly supported scale-pan moves downward, it carries with it the rack-bar, which produces a rotation of the central vertical shaft, and the exterior indicator is caused to revolve around the curved surface of the graduated drum or casing. The drum or casing is preferably provided at the top with an annular series of weight-graduations 53, preferably pounds and fractions thereof; but any other

unit of measurement may be taken, as will be readily apparent. The cylinder or drum is provided below the weight-graduations with annular series of price-graduations 54, corresponding with the weight-graduations, and the indicator is provided at its top with a depending finger 55, and it has a vertical series of indicating points or projections 56. The finger operates in connection with the top graduation 53, and the vertical series of indicating points or projections are arranged to correspond with the price-graduations and bear characters indicating the price per pound or other unit of measurement. The drum or casing and the exterior indicator may be constructed of any desired size, and any number of price-graduations and price-per-pound points or projections may be provided to adapt the scale for the particular use for which it is intended. The exterior indicator is adapted to revolve around the cylindrical drum or casing, and the supporting-frame may be readily rotated to swing the indicator into the view of the purchaser and the seller, so that each may readily see the weight and the price of an article. The casing or drum may be of any diameter to provide a scale of the desired capacity, and the latter may be constructed so that the indicator will make one or more revolutions around the drum or casing, and the number of revolutions will be indicated by characters on the depending arm or stem to which the scale-pan is connected.

It will be seen that the scale is exceedingly simple and inexpensive in construction, that the parts are compactly arranged and housed from the dust, and that any inaccuracy of the weighing mechanism may be readily corrected by either adjusting the indicator or the springs. It will also be apparent that all of the graduations of the drum or casing are within full view and that the supporting-
175 frame may be readily rotated to swing the indicator toward either the purchaser or the seller, so that the weight and the price of an article may be ascertained at a glance. It will also be seen that the graduations may be marked directly upon the drum or casing or may be provided on a suitable covering of paper or other material, and I desire it to be understood that various changes in the form, proportion, size, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

The invention is susceptible of various modifications, and in an application filed on or about March 20, 1900, Serial No. 9,426, I have shown and described the mechanism for rotating the exterior indicator around the casing applied to different forms of scales, and in this application the invention is claimed generically.

What is claimed is—

1. A device of the class described comprising a cylindrical casing provided with exterior graduations, a central shaft mounted within the casing, an exterior indicator mounted on the shaft and arranged to revolve around the cylinder, gearing located within the casing for rotating the shaft, a yieldingly-supported device for receiving the goods to be weighed, and mechanism connected with the device

for receiving the goods to be weighed, for actuating the gearing, substantially as described.

2. A device of the class described comprising a cylindrical casing provided with a vertical series of horizontal annular graduations, an exterior indicator arranged to revolve around the cylindrical casing and provided with a vertical series of indicating points or devices corresponding with the graduations, a yieldingly-supported device for receiving the goods to be weighed, and mechanism connected with the device for receiving the goods to be weighed, for rotating the indicator, substantially as and for the purpose described.

3. A device of the class described comprising a cylindrical casing provided with annular graduations, an exterior indicator arranged to revolve around the cylindrical casing, a central shaft mounted within the casing and carrying the indicator, gearing also located within the casing for rotating the shaft, and a yieldingly-supported device for receiving the goods to be weighed, connected with and adapted to actuate the gearing, substantially as described.

4. A device of the class described comprising a cylindrical casing provided with an annular series of weight-graduations, disposed horizontally, concentric series of horizontally-disposed price-graduations corresponding with the weight-graduations, an exterior indicator arranged to revolve around the casing, and provided with a series of indicating points or projections corresponding with the series of graduations, and a yieldingly-supported device to receive the goods to be weighed connected with and adapted to revolve the indicator, substantially as described.

5. A device of the class described comprising a graduated casing, a vertical shaft arranged centrally of the casing, an exterior indicator arranged to revolve around the casing and carried by the shaft, a horizontal shaft provided with a spur gear-wheel, gearing connecting the said shafts, a spring-supported vertically-movable device designed to have a scale-pan or the like connected with it, and a rack-bar mounted on the spring-supported device and meshing with the gear-wheel, substantially as described.

6. A device of the class described comprising a casing provided with exterior graduations, a central shaft, an exterior indicator carried by the shaft and arranged to revolve around the casing, a vertically-movable support designed to have a scale-pan or the like connected with it, springs supporting the same, and gearing connecting the vertically-movable support with the shaft, whereby the latter will be rotated when the support is moved vertically, substantially as described.

7. A device of the class described comprising a graduated casing, a central shaft, an exterior indicator arranged to revolve around the casing and carried by the shaft, a vertically-movable support, springs connected with the support, a shaft arranged at right angles to the central shaft, and provided with a spur-pinion, gear-wheels connecting the shafts, and a rack-bar mounted on the support and meshing with the pinion, substantially as described.

8. A device of the class described comprising a graduated casing, a central vertical shaft extending through the casing, an exterior indi-

cator arranged to revolve around the casing and carried by the shaft, a pair of springs supported within the casing, a bar connecting the lower ends of the springs and designed to be connected with a scale-pan or the like, a horizontal shaft connected by gearing with the vertical shaft, a spur-pinion mounted on the horizontal shaft, a rack-bar pivoted to the horizontal bar, and a spring engaging the rack-bar and holding the same in mesh with the pinion, substantially as described.

9. A device of the class described comprising a rotary supporting-frame, a graduated casing fixed to the same and carried thereby, an exterior indicator arranged to revolve around the casing, a shaft carrying the indicator, a scale-pan arranged within the supporting-frame, a spring supporting the scale-pan, and gearing operated by the movement of the scale-pan, connected with the shaft and adapted to actuate the indicator, substantially as described.

10. A device of the class described comprising a supporting-frame, a casing provided with exterior graduations and mounted upon the supporting-frame, a vertical shaft, an exterior indicator arranged to revolve around the casing and carried by the vertical shaft, springs suspended within the casing, a vertically-movable bar connecting the springs and provided with a depending arm or stem, a scale-pan connected with the arm or stem and gearing connecting the vertically-movable bar with the shaft, substantially as described.

176

11. A device of the class described comprising a rotary supporting-frame, a casing having exterior graduations and mounted on the supporting-frame, an exterior indicator arranged to revolve around the casing, springs located within the casing, a vertically-movable bar connected with the springs, a scale-pin having a hanger suspended from the vertically-movable bar, gearing connecting the vertically-movable bar with the exterior indicator, and flexible connections between the hanger and the rotary supporting-frame, substantially as described.

12. A device of the class described comprising a base, a rotary supporting-frame journaled on the base, a graduated casing secured to the supporting-frame and provided with an annular flange, a transparent receiver supported upon the flange, an exterior indicator arranged to revolve around the casing and located within the receiver and a yieldingly-supported device for receiving the goods to be weighed connected with the indicator and adapted to actuate the same, substantially as described.

13. A device of the class described comprising a fixed casing having a curved surface provided with exterior graduations, an axially-arranged shaft set in suitable bearings and carrying an arm parallel with the said shaft and arranged to move over the said graduations, a yieldingly-supported receptacle for receiving the goods to be weighed, and mechanism operating in the casing and actuated by the movement of said receptacle to turn the said shaft, substantially as described.

14. A device of the class described comprising a vertical casing provided with exterior graduations, a vertical shaft journaled in

suitable bearings within the casing, a horizontally-swinging vertically-disposed indicator revolving with and supported by the shaft, said indicator being located on the exterior of the casing, a vertically-movable yieldingly-supported device for receiving the goods to be weighed, and gearing connecting the vertically-movable device with the shaft, whereby the latter will be turned when the receptacle moves vertically, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CALVIN F. CHRISTOPHER.

Witnesses:
W. E. HOPKINS.
W. J. HUMMER.

No. 175.

Comp. Scale Co. v Aut-Scale Co. 177

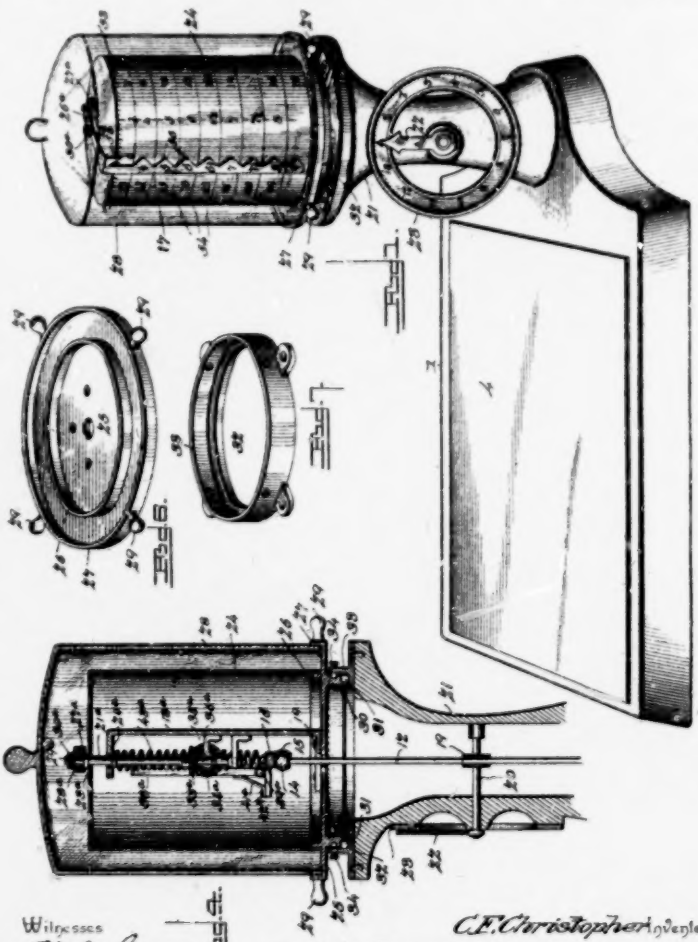
No. 658,732. Patented Sept. 25, 1900.

C. F. CHRISTOPHER.

PRICE SCALE.

(Application filed Mar. 28, 1900.)

(No Model.) 3 Sheets—Sheet 1.



Witnesses

E. K. Stewart.

J. F. C. Riley

C. F. Christopher Inventor

By his Attorneys.

C. A. Snow & Co.

No. 175.

Comp. Scale Co. v Aut-Scale Co. p. 178

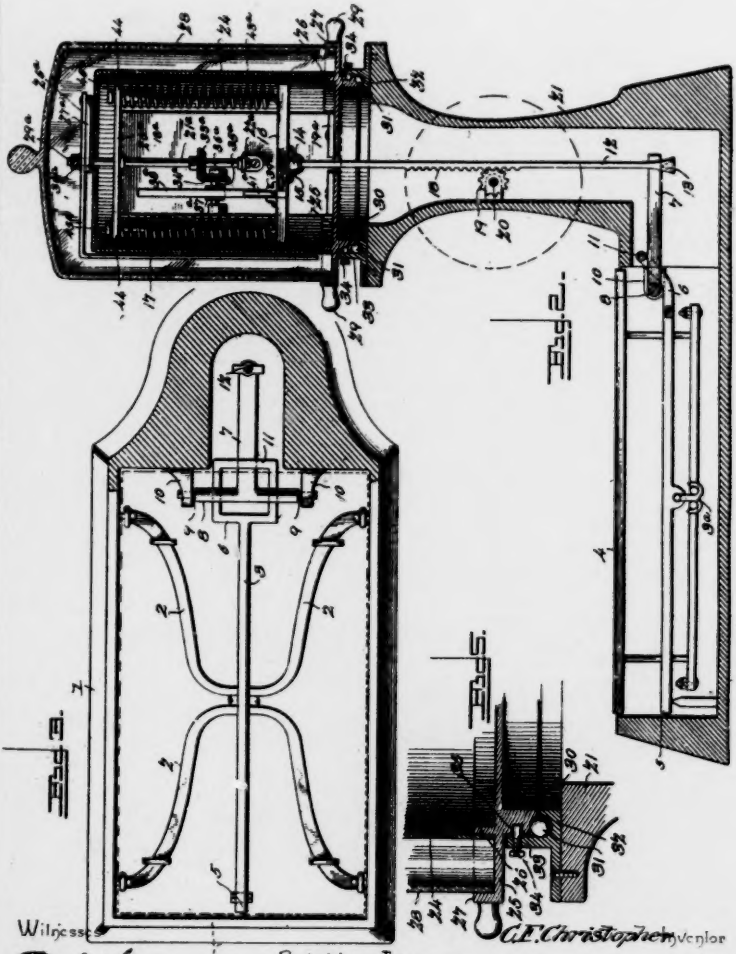
No. 658,732. Patented Sept. 25, 1900.

C. F. CHRISTOPHER.

PRICE SCALE.

(Application filed Mar. 20, 1900.)

(No Model.) 3 Sheets—Sheet 2.



Witnesses:

E. F. Kolenowski

H. J. Riley

By his Attorneys.

C. F. Christopher Inventor

C. A. Snow & Co.

No. 175.

Comp. Scale Co. v Aut-Scale Co } p. 179

No. 658,732.

Patented Sept. 25, 1900.

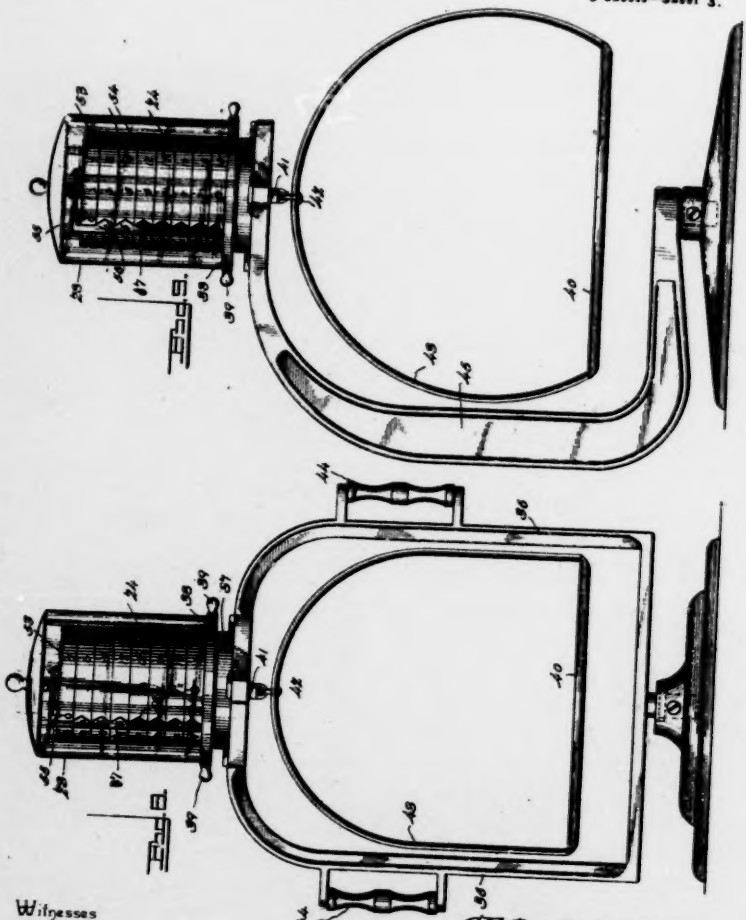
C. F. CHRISTOPHER.

PRICE SCALE.

(No Model.)

(Application filed Mar. 20, 1900.)

3 Sheets—Sheet 3.



Witnesses

E. F. Stewart.

J. F. Riley

C. F. Christopher Inventor

By his Attorneys,

Cadwallader & Co.

180 UNITED STATES PATENT OFFICE.

CALVIN F. CHRISTOPHER, of Washington, District of Columbia, Assignor to the Columbian Automatic Computing Scales Company, of Same Place.

Price-Scale.

Specification Forming Part of Letters Patent No. 658,732, Dated September 25, 1900.

Application Filed March 20, 1900. Serial No. 9,426. (No Model.)

To all whom it may concern:

Be it known that I, Calvin F. Christopher, a citizen of the United States, residing at Washington, in the District of Columbia, have invented a new and useful Price-Scale, of which the following is a specification.

The invention relates to improvements in price-scales.

One object of the present invention is to improve the construction of price-scales and to provide a simple and comparatively-inexpensive one capable of simultaneously indicating the weight and price of an article and adapted to be readily rotated, so that the buyer and seller may successively see the price and the weight.

Another object of the invention is to enable such improvements to be applied to platform and other scales without affecting the rotation of the indicating devices.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

(Here follow diagrams marked pp. 177, 178 & 179.)

In the drawings, Figure 1 is a perspective view of a platform-scale constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a horizontal sectional view, the platform being removed to illustrate the arrangement of the scale-levers and the supplemental scale-lever. Fig. 4 is a vertical sectional view of the upper portion of the scale, the section being taken at right angles to Fig. 2. Fig. 5 is an enlarged detail sectional view illustrating the manner of mounting the rotary disk or plate which supports the graduated cylindrical casing. Fig. 6 is a detail perspective view of the rotary disk or plate. Fig. 7 is a similar view of the bearing-ring, which is provided with the ball-race. Figs. 8 and 9 are elevations showing the rotary graduated cylindrical casing applied to other forms of scales.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a frame or casing having a rectangular horizontal portion receiving scale-levers 2 and 3 of substantially the ordinary construction, and the scale-levers 2, which support a platform 4, are substantially U-shaped, being fulcrumed at their ends on suitable knife-edge bearings and connected at their bends with the longitudinal scale-lever 3 by a double hook or link 3ª. The scale-lever 3, which extends longitudinally of the frame, is fulcrumed at its end 5 on a suitable bearing and is provided at its other end with a substantially-rectangular loop 6, extending beyond the fulcrum of and connected with a supplemental scale-lever 7. The supplemental scale-lever 7, which is substantially T-shaped, as clearly illustrated in Fig. 3 of the accompanying drawings, is provided at the ends of its transverse arms 8 with journals 9, which are mounted in suitable bearings 10, located at opposite sides of the loop of the scale-lever 3; but the T-shaped supplemental scale-lever may be fulcrumed in any other suitable manner. The longitudinal arm of the supplemental scale-lever extends through the loop 6, which is bent upward, as illustrated in Fig. 2 of the drawings, and which is provided at its transverse portion 11 with a suitable knife-edge for engaging the supplemental lever. The supplemental lever is provided for the purpose of enabling the necessary movement for operating the price-scale to be obtained from the comparatively-slight movement of the platform 4, and the said supplemental lever is connected with the lower end of a rod or bar 12. The rod or bar 12, which extends through the supplemental scale-lever 7, is provided at its lower edge with a knife-edge bearing 13 for engaging the lower face of the supplemental scale-lever; but any other suitable connection may be employed. The upper end of the connecting bar or rod 12 is provided with a ball 14, which is received within a socket 15 of a vertically-movable horizontal bar 16 of the mechanism hereinafter described for transmitting motion to an exterior indicator 17. The connecting rod or bar is provided between its ends with teeth 18, forming a rack and meshing with a
181 pinion 19 of a horizontal shaft 20, which is journaled in suitable bearings of the upright portion 21 of the frame 1 and which carries a hand 22. The hand 22, which is fixed to the shaft, is arranged on the exterior of the frame or casing, and it moves over a circular graduated surface preferably consisting of a ring 23, having an annular series of graduations and numbers and designed to indicate the weight of the goods or other articles sold. Instead of arranging the annular series of graduations on the ring 23, as illustrated in Fig. 1 of the drawings, a disk or any other suitable surface may be provided. The graduated cylindrical casing 24 is supported in a vertical position upon a rotary disk or plate 25, and the exterior indicator 17 is revolved around the graduated cylindrical casing 24 by the mechanism hereinafter described for transmitting motion from the vertical movable bar 16 to the said indicator 17, which mechanism is claimed specifically in an application for patent filed on or about December 9, 1899, Serial No. 739,826. The rotary disk or plate 25 is arranged in a horizontal plane and is provided at its upper face with inner and outer concentric vertical flanges 26 and

27, which support the graduated cylindrical casing and a transparent receiver 28 and retain the same in position on the rotary disk or plate. The cylindrical casing fits over the inner flange 26, and the transparent receiver is arranged within the outer annular flange 27.

A bracket 18ª, having a bottom flange 19ª, is secured to the upper face of the rotary disk or plate by suitable fastening devices extending through the said bottom flange. The bracket 18ª is provided at its top with a flange 20ª, forming a bearing for a central vertical shaft 21ª, which has its lower end stepped in a suitable bearing 22ª extending horizontally from the bracket at an intermediate point. The central vertical shaft extends through a central aperture 23ª of the top of the casing, and it carries the L-shaped exterior indicator, which is adapted to revolve around the exterior of the casing. The exterior indicator extends horizontally from the upper end of the shaft to a point slightly beyond the casing, and it depends at the exterior thereof. The horizontal portion of the indicator is provided between its ends with an opening for the reception of the central vertical shaft, and its inner or rear portion 26ª constitutes an arm which is adapted to be secured to a sector-shaped frame or plate 27ª, fixed to the upper end of the vertical shaft and extending horizontally therefrom, as clearly illustrated in Figs. 1 and 2 of the accompanying drawings. The shaft 21ª, which is disposed axially with relation to the casing, is provided above the same with a squared portion 28ª, which fits into a corresponding opening of the sector-shaped plate or frame, and the upper end 29ª of the shaft is threaded for the reception of a suitable nut 30ª. The sector-shaped plate or frame may be provided with any suitable means for enabling the arm 26ª of the indicator to be clamped at the desired adjustment.

The central vertical shaft carries a bevel-pinion 33ª, which meshes with a vertical bevel-pinion 34ª of a horizontal shaft 35ª, journaled in suitable bearings 36ª of the bracket 18ª and carrying a spur-pinion 37ª, which meshes with a pivotally-mounted rack-bar 38ª. The rack-bar 38ª, which is pivoted at its lower end 39ª on the vertically-movable horizontal bar 16, is held in engagement with the spur gear-wheel 37ª by a spring 41ª, secured at its lower end to an arm 42ª of the bar 16 and having its upper end bearing against the back of the rack-bar at a point above the pivot thereof. The horizontal bar 16 has its ends connected with the lower terminals of a pair of coiled springs 43ª, which are suspended from the bracket, from perforated ears or extensions thereof located at opposite sides of the top flange. The perforated ears or flanges 44ª of the top flange of the bracket receive adjusting devices 45ª, consisting of stems provided with lugs or projections, as fully described in the application before referred to. The adjusting devices are adapted to be rotated to draw the springs upward and to force them downward, and by this construction any inaccuracy of the scale resulting from long use of the springs may be readily corrected.

The vertically-movable horizontal bar may be provided with any suitable means for connecting it with the rod or bar 12, and instead of employing the ball-and-socket joint 14 a swivel connection or joint may be used. When the yieldingly-supported vertically-mov-

able horizontal bar 16 moves upward and downward, it carries with it the rack-bar 38ª, which produces a rotation of the central vertical shaft, and the exterior indicator is caused to revolve around the curved surface of the graduated drum or casing. The casing is preferably provided at its top with an annular series of weight-graduations 53, preferably pounds and fractions thereof; but any other unit of measurement may be taken, as will be readily apparent. The casing is provided below the weight-graduations with annular series of price-graduations 54, corresponding with the weight-graduations, and the indicator is provided at its top with a depending finger 55, and it has a vertical series of indicating points or projections 56. The finger operates in connection with the top graduations 53, and the vertical series of indicating points or projections are arranged to correspond with the price-graduations and bear characters indicating the price per pound or other unit of measurement. The exterior indicator is adapted to revolve around the casing, and the indicating devices comprising the indicator and the graduated casing may by the means hereinafter described be readily rotated, so that the
182 purchaser and seller may successively see the weight and price of an article. The rotary disk or plate, which is provided at intervals with outwardly-extending knobs or handles 29, is provided with a depending annular bearing-flange 30, which is supported upon an annular series of antifriction-balls 31, and which is arranged within a bearing-ring 32, as clearly shown in Figs. 2 and 5 of the accompanying drawings. The bearing-ring, which is mounted upon the upright portion 21 of the frame or casing 1, is provided with a vertical wall or flange 33, and it has an interior groove forming a race for the balls and located adjacent to the bottom of the wall or flange 33. The depending bearing-flange is provided at its lower edge with an approximately-inclined bearing-face conforming to the configuration of the balls and forming substantially a cone-bearing. This construction permits the rotary disk or plate and the mechanism supported by the same to be turned frictionlessly and without interfering with the connecting rod or bar 12, so that the exterior indicator and the adjacent graduations of the vertical cylinder may be successively viewed by the seller and purchaser. This construction also enables this result to be accomplished without rotating the frame or casing of the scale. The connecting rod or bar extends through a central aperture of the rotary disk or plate, and the ball of its upper end is adapted to turn freely in the socket of the vertically-movable horizontal bar 16.

The rotary disk or plate is turned by means of the projecting handles 29, and it is retained in the bearing-ring by screws 34 or other suitable fastening devices, which extend through the wall or flange 33 and project into an annular groove 35 of the depending bearing-flange 30. The annular groove 35 is located at the outer face of the bearing-flange at a point between its lower edge and the lower face of the rotary disk or plate.

In Fig. 8 of the accompanying drawings the means for enabling the graduated cylinder to be rotated independently of the scale-frame are shown applied to a substantially-rectangular scale-frame

36, arranged in a vertical position similar to that illustrated in the said application and supporting a bearing 37, constructed like that heretofore described. A rotary disk or plate 38, which is constructed the same as heretofore described, has its depending bearing-flange arranged within the bearing-ring, and it is provided with knobs or handles 39, by means of which it is turned. A scale-pan or receptacle 40 is connected with a depending stem 41 by a swivel-joint 42 to permit the disk or plate 38 to be turned independently of the scale-pan. Instead of employing the scale-pan 40 and the frame or hanger 43 a hook or any other suitable device may be provided for receiving the goods to be weighed. The frame 36 of the scale is provided at opposite sides with handles 44; but these may be omitted, and the improvements, as illustrated in Fig. 9 of the accompanying drawings, may be applied to a scale having a frame 45 on one side only. The frames illustrated in Figs. 8 and 9 of the accompanying drawings are each mounted on a suitable base, and they may be secured to the same in any desired manner.

It will be seen that the graduated casing and the exterior indicator are adapted to be rotated freely for enabling the seller and purchaser to successively see the price and the weight without rotating the frame of the scale and that such rotary movement is frictionless and does not interfere with the connections between the receptacle for the goods to be weighed and the mechanism for actuating the exterior indicator. It will also be apparent that the supplemental scale-lever enables sufficient movement to be obtained from a platform-scale to actuate the mechanism for revolving the exterior indicator around the graduated casing.

What I claim is—

1. A device of the class described comprising a frame, a bearing-ring mounted on the frame and provided with a ball-race, anti-friction-balls arranged in the said race, a rotary disk or plate supported by the said balls, a graduated casing arranged in a vertical position on the disk or plate, an exterior indicator arranged to move over the graduations of the casing, a device for receiving the goods to be weighed, and mechanism connected with and actuated by the device for receiving the goods to be weighed, said mechanism being connected with and adapted to actuate the indicator, substantially as described.

2. A device of the class described comprising a frame, a bearing-ring mounted upon the frame, a rotary disk or plate supported upon the bearing-ring, a vertical casing mounted upon the disk or plate, an exterior indicator arranged to move over the graduations of the casing, mechanism located within the casing for actuating the indicator, a device for receiving the goods to be weighed, and connections between such device and the said mechanism, said connections being provided with a joint adapted to permit the rotary disk or plate and the mechanism within the casing to be rotated independently of the device for receiving the goods to be weighed, substantially as described.

3. A device of the class described comprising a frame, a bearing-ring having an upwardly-extending wall or flange and provided

within the same with a ball-race, a rotary disk or plate provided with a depending bearing-flange extending into the bearing-ring, antifriction-balls arranged in the ball-race and receiving and supporting the bearing-flange of the disk or plate, a vertical casing provided with graduations and supported by the disk or plate, an exterior indicator, mechanism located within the casing for actuating the indicator, a device for receiving the goods to be weighed,
183 and means for connecting such device with the said mechanism, substantially as described.

4. A device of the class described comprising a frame, a bearing-ring supported by the frame and provided with an upwardly-extending wall or flange and having a ball-race within the same, antifriction-balls arranged within the ball-race, a rotary disk or plate provided with a depending bearing-flange supported by the said balls, said bearing-flange being provided with an annular groove, devices mounted on the wall or flange of the bearing-ring and extending into the annular groove, a vertical casing mounted on the disk or plate and provided with graduations, an exterior indicator arranged to move over the graduations of the casing, gearing located within the casing for actuating the indicator, and means for connecting the gearing with a device for receiving the goods to be weighed, substantially as described.

5. A device of the class described comprising a frame, a longitudinal scale-lever provided at one end with a loop and fulcrumed at the other end, a supplemental scale-lever extending through the loop of the said scale-lever, a platform, means for connecting the platform with the scale-lever, a graduated casing mounted upon the frame for rotation, an exterior indicator arranged to move over the graduations of the casing, mechanism within the casing for actuating the indicator, and a connecting bar or rod extending from such mechanism to the supplemental scale-lever, substantially as described.

6. A device of the class described comprising a frame provided with an exterior graduated surface, a longitudinal scale-lever provided at one end with a loop, a supplemental scale-lever extending through the said loop, a platform, means for connecting the platform with the longitudinal scale-lever, a graduated casing mounted for rotation on the frame, an exterior indicator arranged to move over the graduations of the casing, mechanism within the casing for actuating the indicator, a connecting-rod extending from the supplemental scale-lever to the said mechanism and provided with a rack, a pinion meshing with the rack, and an exterior hand connected with the pinion and arranged to move over the graduated surface of the frame, substantially as described.

7. A device of the class described comprising a frame, a longitudinal scale-lever provided with a loop, a supplemental scale-lever extending through the loop, a platform, means for connecting the platform with the longitudinal scale-lever, a bearing-ring mounted upon the frame, a rotary disk or plate extending into the bearing-ring and arranged to rotate on the same, a vertical casing provided with graduations, an exterior indicator arranged to move over the

graduations, mechanism within the casing for actuating the indicator, and a connecting rod or bar extending from the said mechanism to the supplemental scale-lever, substantially as described.

8. In a device of the class described, the combination with two members, a vertical cylinder having graduations, and an indicator coöperating with said graduations, one of these members being revoluble with reference to the other about a vertical axis, of a weight-receptacle operatively connected to impart rotation to the revoluble member, and a spring within the cylinder connected to the weight-receptacle and tending to resist the depression of the latter, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CALVIN F. CHRISTOPHER.

Witnesses:
H. F. RILEY,
W. PERRY HAHN.

184 *Testimony of Compl't in Rebuttal.*

In the Supreme Court of the District of Columbia.

THE COMPUTING SCALE COMPANY OF AMERICA, Complainant,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

In Equity. No. 23,420.

Deposition of Arthur S. Browne, a witness called in behalf of the complainant, in rebuttal, taken on the 11th day of November, 1903, at the office of Church & Church, 908 G Street N. W., Washington, D. C., before Thomas Durant, a notary public in and for the District of Columbia, acting as special examiner by consent, pursuant to notice.

Present: Melville Church in behalf of complainant, William H. Doolittle in behalf of defendant.

Deposition of Arthur S. Browne.

ARTHUR S. BROWNE, having been duly sworn deposes and says in answer to interrogatories proposed to him by Mr. Church of counsel for the complainant, as follows:

Q. 1. Are you the same Arthur S. Browne who was examined as a witness for the complainant in its *prima facie* case?

A. I am.

Q. 2. Have you read and do you understand the deposition
185 of George P. Whittlesey, the expert witness called in behalf of the defendants, and have you read and do you understand

the various patents referred to by said Whittlesey in his deposition illustrative of the prior art as it existed at the date of the invention of the Hayden patent in suit?

A. Yes.

Q. 3. Please consider the prior state of the art as referred to by Mr. George P. Whittlesey, and his views in reference thereto, and state whether or not you find in said prior art the invention of the Hayden patent in suit as particularly set forth in claims 1, 2, 6, 7, and 8 thereof, giving your reasons for any opinion you may express.

A. I understand Mr. Whittlesey to frankly admit that there is nothing in the prior art which is substantially identical with the structure of the patent in suit or which precisely meets the terms of the recited claims; Mr. Whittlesey's position being that in view of the five patents which he cites, in three of which there are horizontal cylinders or chart drums, and in two of which there are vertical chart drums, the production of the structure of the patent in suit as defined in the claims mentioned did not involve invention, but merely the exercise of ordinary mechanical skill. I do not agree with Mr. Whittlesey in this position and will state my reasons therefor.

At the outset it is necessary to call attention to the circumstance that Mr. Whittlesey has made a mistake in his understanding of the Beckwith patent No. 12249, dated January 16, 1855, concerning which he states that it discloses a scale having a chart drum which rotates on a vertical axis. This is not the case. On the contrary the chart drum of this Beckwith patent does not rotate, but the index G does. This index is carried on the arm E which turns around the runner B. After a load has been placed upon the scale and has come to rest the index (not the drum) is rotated by hand until it registers with the line of figures beneath the price per pound indication, whereupon the price is indicated. This is obviously a defective arrangement because if the scale should be suspended in the usual manner the grocer would have to walk around the scale to see what the price was, or else twist the scale as a whole. The only relevance, therefore, which this patent has is that it shows weight and price indications marked upon a vertical drum. This drum is not encased and consequently the surface of the drum is subject to dirt and handling which eventually obliterates the indication.

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This Beckwith patent is, however, an early instance of the attempt to produce a computing scale and is a convenient starting point to consider the growth of the art with the view of determining whether or not the final outcome as represented by the Hayden patent in suit did or did not involve the exercise of invention.

Fifteen years after the Beckwith patent appeared the Phinney patent No. 106869, dated August 30, 1870. Phinney did not evidently see how he could utilize the vertical drum of the Beckwith patent with such advantages as are incidental thereto, but, on the contrary, arranged his chart drums horizontally. Phinney has two chart drums (not one) and in order to encase the same has produced a structure of such size as to be impracticable provided the drums

should be of enough size to contain a sufficient number of price indications. In this Phinney structure there is a single weighing spring which is wholly above the chart drums, and the suspension bar or runner hangs down between the two chart drums, being slotted to straddle the shaft of the two drums, and being
187 equipped with a vertical rack, meshing with a pinion on the said shaft. Phinney evidently appreciated the importance of encasing the chart drum and the counterbalancing mechanism for the purpose of protecting the same and preventing tampering therewith, and also of rendering the indicating operation automatic, but was able to do so only by using two chart drums instead of one, and giving an excessive height to the scale as a whole. At this time the Beckwith patent had been before the world for over fifteen years and within the reach of the skilled mechanics in this art and certainly Phinney when he approached the problem failed to utilize the idea of a vertical drum but stopped with the horizontal drums with the attendant disadvantages incidental thereto, including the duplication of the drums, the slotted runner and the excessive height of the scale, due to the placing of the counterbalancing spring entirely above the drums.

The art apparently rested in this condition for 20 years more until the invention of the Babcock patent No. 421805, dated February 18, 1890. During this entire period of 20 years both the Beckwith patent and the Phinney patent had been within reach of the skilled mechanics in this art and none of them apparently appreciated the desirability of rotating a vertical drum automatically. Evidently it was not obvious how this could be done to Babcock because he clung to the two horizontal drums of Phinney with a single spring and a single runner located between the two chart drums. Babcock apparently appreciated the objection to the excessive height of the Phinney structure and his improvement results in a more compact scale vertically since he has brought his single spring partly between the two drums. This, however, has
188 involved the placing of the axis of the spring, not only out of coincidence, but out of parallelism with the line of movement of the draft bar or runner; and, as the result, it was necessary for Babcock to use a back guide for the rack bar portion of the draft bar or runner so as to withstand the backward pull of the spring. This involves sliding friction between the draft bar and the aforesaid rear guide, which interfers with the accuracy of weighing, both because the friction is not uniform, due to the varying stress of the spring under different loads, and because the two frictional surfaces cannot be maintained in uniform condition. The result is a sacrifice of accuracy of weighing, thus rendering the scale impracticable. Moreover, Babcock has not encased his drums except at the front and consequently the drums are exposed to dirt, and all parts of the scale are exposed to tampering. Evidently Babcock did not solve the problem of how to produce an automatic computing scale with a vertical chart drum.

Nearly contemporaneous with the Babcock patent is that of Freeman, No. 431456, dated July 1, 1890. The Beckwith patent of

1855 and the Phinney patent of 1870 were both accessible to Freeman and had been to the skilled mechanics of this art for a period of 20 years, and it is interesting to note Freeman's solution. He evidently appreciated such advantages as are incidental to a vertical chart drum and also the advantage of making it rotary, instead of rotating an index finger (as Phinney did), and the idea of making a chart drum automatically rotatable was then old and public property owing to the previous expiration of the Phinney patent. Evidently, it was not obvious to Freeman how a vertical chart drum could be automatically rotated, since with the Phinney auto-
189 matically rotating horizontal drums available Freeman has stopped with a hand rotated chart drum. In this Freeman patent (referring to Fig. 2) the casing 1, together with the housing 10 is stationary, while the drum 25, upon which the indications are carried, and which also serves as a platform for the load, is rotatable by hand. In this case either the drum must be rotated by hand before the load is placed upon the scale, or, else, the load must be rotated together with the drum. Moreover, the drum is only partly protected by the external casing since, when the scale is not in use, about half of the drum is exposed and hence the figures indicating price per pound are always exposed to dust and dirt. The impracticability of such a contrivance is apparent, and the very fact that Freeman devised and patented it persuasively shows that it was not obvious how automatic rotation (which was then 20 years old) could be applied to a vertical drum.

The art then rested for another period of 5 years until the invention of the Smith patent No. 545616, dated Sept. 3, 1895. Prior to Smith vertical drums and horizontal drums were old, both had been rotatively mounted, and the drum had been automatically rotated. It is instructive to note what Smith produced, with this information available. Smith evidently appreciated the objections to two chart drums, to the exposed mechanism of the Babcock patent, to the importance of casing and protecting the moving parts of the scale, and to the objection of excessive height as disclosed in the Phinney scale. He accordingly produced a scale having a single chart drum (a horizontal one however) which is compact vertically, and in which all of the moving parts are protected and encased. In doing this, however, he has been obliged to increase the width of the scale hori-
zontally, and to vertically increase the mechanical complexity
190 of the scale. This is well shown in Figure 2 of the drawings of the Smith patent, to which I refer. As here shown the shaft of the chart drum has two pinions, one at each end; there are two rack bars e' e', one at each end; these two rack bars are connected by rods e' e' to an upper cross bar d by pivotal connections; said cross bar a' is connected at its middle by the screw stem b' to the draft bar n below; and each outer end of this lower draft bar is pivotally connected at the lower end of a corresponding runner k; each of the two runners is loosely straddled by the adjacent outer end to the upper a'; each of these runners is connected to its own counterbalancing spring j; and each counterbalancing spring is loosely connected at its upper end to one end of an upper cross bar c.

Separate housings are necessary at each end of the scale to house and protect the portion of the operating mechanism there located; this being in addition to the housing for the chart drum. It will be noted that all of the operating mechanism is external to the chart drum and is of a very complicated character as compared with the preceding patents of Phinney and of Babcock having automatically rotated chart drums. Undoubtedly the scale of the Smith patent is an improvement upon these prior patents as far as compactness, protection, and accuracy of weighing are concerned, but these advantages have been secured only at the expense of greater complexity. Evidently, however, Smith did not appreciate the simplicity which is incident to the employment of a vertical drum, and hence retained the horizontal chart drum. At this time both the Phinney patent with the automatically rotated horizonal drums, and the vertical drum of Beckwith had been concurrently before those skilled in the art for a period of 25 years, and the added light of the Babcock and Freeman patents had been available for 5 years, and yet
191 the result was the complicated Smith structure and not the structure of the patent in suit, which now seems to Mr. Whittlesey, after its production, to have been entirely obvious to the skilled mechanic in this art. The final step, however, of the prior art was the complicated Smith structure with the horizontal drum.

Hayden was the first to produce an automatically rotated vertical chart drum for a spring computing scale, and this only after both Beckwith and Phinney had been before the world concurrently for a generation. Hayden by the patent in suit produces a scale in which the entire dimensions are only slightly larger than the chart drum itself, substantially all of the operating mechanism is located within the chart drum itself; and a single casing serves not only to house and protect both the enclosed chart drum, but also the operating mechanism as well. The minimum compactness is that secured, enabling a large chart drum with the maximum number of computations thereon to be employed, without unduly increasing the height of the scale; the weighing mechanism can be reduced to a simple form; all parts are adequately housed and protected with the minimum difficulty and expense; and the greatest dimension of the scale is the vertical dimension which is a matter of importance to grocers where vertical space above the counter is more available than horizontal space as a general rule. All of these advantages are incidental to the vertical drum and are realized while at the same time the drum is automatically rotated by appropriate connection with the movable balancing mechanism.

As the result a practical commercial form of scale with vertical chart drum is produced; Hayden was the first to show how this could be done consistent with automatically rotating the chart drum; and the defendants have followed in Hayden's footsteps.

192 I find nothing in this historical summary of the prior art which tends in the slightest to negative the quality of invention in what Hayden did; and it seems to me inconceivable, had what he accomplished been within the skill of a mechanic, that the automatically rotated horizontal drum of the Phinney patent, to-

gether with the vertical drum of the Beckwith patent, could have existed for a generation without any effect in producing the structure of the Hayden patent in suit, although it is evident that the attention of others had been directed to this subject-matter in the meanwhile, as shown by the prior Babcock, Freeman and Smith patents.

I, therefore, am of the opinion, stated at the outset of this answer, that the improvement of Hayden involved the exercise of invention and was not the mere skill of a mechanic, in selecting from the known resources of his art.

No cross-examination.

——— ———.

Counsel for complainant offers in evidence a certified copy of patent No. 700919, granted to Austin B. Hayden, assignor to Computing Scale Company of America, dated May 27, 1902, and the same is marked "Complainant's Exhibit Certified Copy of Patent No. 700919 in Suit;"

Also a certified copy of the file wrapper and contents of said patent No. 700919, and the same is marked "Complainant's Exhibit Certified Copy File Wrapper and Contents of Patent in Suit;"

Also certified copy of certain papers from the record of the interference No. 20795, entitled Culmer *vs.* Stimpson *vs.* Hayden and the same is marked "Complainant's Exhibit Certified Copy from Interference Records."

193 In the Supreme Court of the District of Columbia.

In Equity. No. 23420.

THE COMPUTING SCALE COMPANY OF AMERICA, Complainant,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

"Complainant's Exhibit Certified Copy File Wrapper and Contents of Patent in Suit."

THOMAS DURANT,
Notary Public, Special Examiner.

[SEAL.]

194 2-389.

UNITED STATES OF AMERICA,
DEPARTMENT OF THE INTERIOR,
PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify That the annexed is a true copy from the Records of this office of the File Wrapper and Contents in the matter of the

Letters Patent of
Austin B. Hayden, Assignor to
Computing Scale Company of America,
Number 700,919, granted May 27, 1902,
for
Improvement in Computing Scales.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington this 18th day of November, in the year of our Lord one thousand nine hundred and three and of the Independence of the United States of America the one hundred and twenty-eighth.

F. I. ALLEN,
[SEAL.] *Commissioner of Patents.*

195 Amount Received
$15.
Chief Clerk.

Petition.

To the Commissioner of Patents:

Your petitioner, Austin Arthur B. Hayden, a citizen of the United States, residing at Chicago in the County of Cook and State of Illinois, prays that Letters patent be granted to him for the improvement in Computing Scales, set forth in the annexed specification; and he hereby appoints Philip C. Dyrenforth, William H. Dyrenforth, Julius W. Dyrenforth, Douglas Dyrenforth and John H. Lee under the firm name of Dyrenforth & Dyrenforth, of Chicago, Illinois, and Washington, D. C., his attorneys, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to receive the Patent, and to transact all business in the Patent Office connected therewith.

AUSTIN B. HAYDEN.

Registration No. 452.

D & D
Sep. 6, 1899.
Cancelled
U. S.
Revenue Stamp
25 cents.

Specification.

To all Whom it may Concern:

Be it known that I, Arthur B. Hayden, Austin a citizen of the United States, residing at Chicago, in the County of Cook and State of Illinois have invented a new and useful improvement in Computing Scales, of which the following is a specification:

My invention relates particularly to an improvement in computing scales of the spring-balance type, my object being especially to increase the computing capacity of scales of this type.

In the accompanying drawings, illustrating my invention—

Figure 1 is a view in front elevation of a spring-
196 balance computing-scale embodying my improvements in preferred form; Figure 2, an enlarged broken view of the computing-cylinder and its casing; Figure 3, a broken vertical sectional view of the same; and Figure 4, a horizontal section at line 4 of Figure 3.

A represents a standard, which may be of a variety of forms; B, a vertically disposed non-rotatable cylin-
through the medium of lugs A
Per D. drical casing supported from said standard; C, a vertical computing-cylinder journaled in the casing B; D, a load-hanger comprising an upper cross-piece a provided with a threaded stem a^1 which projects upward through the casing top and is supplied with nuts a^2, a^3, and is provided also with perforated enlargements a^4 serving to receive downward projecting guide-pins a^5, spring coils a^6, and a lower cross-piece a^7; E, a combined load-supporting and cylinder-actuating rod; and F, a load-pan or suspended weighing platform.

The casing-cylinder B is provided with a vertical slot b along one margin of which is a price-index, indicating cents per pound. The price-index preferably is numbered from bottom to top, the prices shown ranging from 2 cents to 30 cents. A fine hair wire b^1 divides the slot longitudinally for convenience in reading.

The computing-cylinder, which revolves as the rod E is drawn downward, is provided with circumferential columns, the lower one of which, preferably, is graduated to pounds and ounces, the pound lines being indicated by numbers. Above the weight-index appear the computations, each computation being set above its appropriate weight-index and opposite its appropriate price-index number. Thus above the weight-index number "5" (Fig. 2), and opposite the price-index number "4," occurs the computation "20" which is the cost of 5 pounds at 4 cents per pound.

197 Sub. C'.

For economy of space, only those computations occurring directly above the pound numbers of the weight-index are written out. For the computations figured to ounces, the horizontal circumferential columns are graduated to cents, indicated by short vertical lines. Thus, in Fig. 2, directly above the mark *c*, indicating 5 lbs., 4 ozs., and opposite the price-index number 4, occurs the penny graduation c^1, indicating that 1 cent is to be added to 20 cents to give the cost of 5 lbs., 4 ozs.

[Matter enclosed between rules erased in copy.]

Erased per A.

The dotted reversed figure 5 shown at *d* (Fig. 2) is intended to represent a number of a weight-index for use at the rear side of the scale. It is obvious that the numbers of such an index would be placed at an angle of 180 degrees to the corresponding numbers of the index reading at the front. This construction is well understood.

[Matter enclosed between rules erased in copy.]

The cylinder C is supported at its base on ball-bearings which move in a horizontal circular channel on the inner surface of the bottom of the cylinder B. The rod E is provided with a spiral groove of very

Per F. high pitch which moves between rollers [$\overset{f}{F}$]* and [$\overset{f^1}{F^1}$]* journaled in lugs f^2 centrally located on the inner surface of the bottom of the cylinder C. The shafts f^3 f^4 of the rollers are connected by springs f^5 and the lugs are provided with slots f^6 to permit yielding.

In the construction shown, the spiral of the rod E has such a direction as to cause the cylinder C to rotate to the front and left. Figure 2 shows the position after the cylinder has rotated from the zero point to the number 5 of the pound-index.

It will be noted that in the construction shown, the rod E is non-rotatable, and this is the preferred con-

198 struction. The spiral rod passing through the lower ends of the casing and serving, by means of its connection with the two cylinders, to rotate the computing-cylinder is regarded as the essence of this feature of

[*Words and figures enclosed in brackets erased in copy.]

Insert F'.

the invention, however, regardless of the precise details of connection between cylinders and rod. A

When a weight is thrown upon the pan F, the rod E is drawn sharply down, causing the cylinder C to revolve. The device comes quickly to rest, however, because of the fact that the inertia of the cylinder C acts always contrary to the movements of the rod E. Thus, the scale is almost wholly devoid of the series of short vertical movements peculiar to spring-balance scales, enabling a quick reading to be taken.

Changes in details of construction within the spirit of my invention may be made, hence no limitation is to be understood by the precise description given above, except as may appear from the appended claims.

What I claim as new and desire to secure by letters patent is—

Erased per B.

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1. In a spring-balance computing scale, the combination of a suitably supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-pan supported from said casing, and means connected with said pan and cylinder for rotating the cylinder as the pan is lowered under pressure, substantially as and for the purpose set forth.

1*b* [2].* In a spring-balance computing-scale, the combination of a suitably supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing,
199 provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod suspended from said casing, and connecting means between rod and computing-cylinder, whereby by longitudinal movement of the rod rotary movement is imparted to said cylinder, substantially as and for the purpose set forth.

2*b* [3].* In a spring-balance computing-scale, the combination of a suitably supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod non-rotatably suspended from said casing, and connecting means between said rod and computing-cylinder, whereby longitudinal movement of the rod produces rotary movement of

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[Matter enclosed between rules erased in copy.]
[*Words and figures enclosed in brackets erased in copy.]

the cylinder, substantially as and for the purpose set forth.

3*b* [4].* In a spring-balance computing-scale, the combination of a suitably supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod non-rotatably suspended from said casing, said rod being provided with a spiral, and rollers journaled in said cylinder and engaging said spiral, whereby longitudinal movement of the rod turns the cylinder, substantially as and for the purpose set forth.

4*b* [5].* In a spring-balance scale, a suitably supported non-rotatable casing provided with a vertical slot, a price-index on a margin of said slot, a vertical computing-cylinder journaled in said casing, ball-bearings between the bottom of said cylinder and the bottom of said casing, a load-supporting rod passing through central perforations in the bottoms of said casing and cylinder, and provided with a spiral, spring-connection between said rod and the top of said casing, and rollers journaled on the inner surface of the bottom of said [casing]* cylinder and contacting with said spiral, whereby longitudinal movement of the rod produces rotary movement of the spiral, substantially as and for the purpose set forth.

5*b* [6].* In a spring-balance scale, a suitably supported non-rotatable casing provided with a vertical slot, a price-index on a margin of said slot, a vertical computing-cylinder journaled in said casing, a load-supporting rod extending within said cylinder, a spring load-hanger D provided with a non-rotatable top cross-piece *a* having a threaded stem a^1 equipped with nuts and provided also with means for preventing rotation, said hanger D having spring connection with said rod, and connections between rod and cylinder, whereby the rod in moving longitudinally turns the cylinder, substantially as and for the purpose set forth.

Insert D'.>

[*Words and figures enclosed in brackets erased in copy.]

Erased per B.

8. In a spring-balance scale, the combination of a vertical non-rotatable casing provided with a vertical price-index, a vertical computing-cylinder, journaled in said casing provided with circumferential columns of computations opposite the numbers of said price-index, a weight-index arranged in a circumferential column, each computation being set in vertical alignment with its appropriate weight-index mark and in horizontal alignment with its price-index number, a load-pan, spring connection between said pan and casing, and means connected with said pan and cylinder for turning the cylinder as the pan moves vertically, substantially as and for the purpose set forth.

9. In a spring-balance scale, a casing provided with a vertical price-index, a computing-cylinder
201 provided with a circumferential column graduated to pounds and ounces, and provided also with circumferential columns graduated to pennies, and provided with computations for pounds set in appropriate circumferential columns and in vertical alignment with their proper pound numbers, a spring-supported load-pan, and means connected with said pan for turning said cylinder as the pan is moved vertically, substantially as and for the purpose set forth.

AUSTIN B. HAYDEN.

In presence of:
EDWARD H. AMENDT.
D. W. LEE.

Oath.

STATE OF ILLINOIS, *County of Cook, ss:*

Austin
Arthur B. Hayden, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States and resident of Chicago, in the County of Cook and State of Illinois, and that he verily believes himself to be the original, first, and sole inventor of the improvement in Computing Scales described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in any country before his invention or discovery thereof or more than two years prior to this application; or in public use or on sale in the United States for more than two years prior to this application, and that no application for patent on said improve-

[Matter enclosed between rules erased in copy.]

ment has been filed by him or his representatives or assigns in any foreign country, except as follows:

AUSTIN B. HAYDEN.

Subscribed and sworn to before me this 29th day of August A. D. 1899.

[NOTARIAL SEAL.] DANIEL W. LEE,
Notary Public.

202 2–260.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR, E. B. C.
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *October* 9, 1899.
Mailed " " "

A. B. Hayden, care of Dyrenforth & Dyrenforth, city:

Please find below a communication from the Examiner in charge of your application for "Computing Scales," filed Sept. 8, 1899, Ser. No. 729,876.

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

The modifications referred to in lines 6 to 26 of page 3 of the specification should be shown in the drawings or reference thereto erased from the specification. A figure should be added which will show the weight index referred to in lines 27 to 29 of page 3 and lines 1 to 4 of page 4.

Claims 1, 2, 3, 8 and 9 are rejected upon the patent to Smith, 545,616, Sept. 30, 1895, Price Scales, in view of the patent to Turnbull, 378,382, Feb. 21, 1888, Spring Scales. It would not involve invention to arrange upon Turnbull's scales a vertical stationary casing having within it a revoluble computing chart the axis being connected with the index-carrying shaft P shown in the Turnbull patent.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

203 Application of Austin B. Hayden. No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents.

SIR: In the matter of the above-named application we hereby amend as follows:

A. *Pages 3 & 4—*

Strike out the paragraph beginning with line 3 from the bottom of page 3 and ending with line 4 on page 4.

In the drawings, Figure 2—

Cancel the reference-letter *d* and the reversed dotted Figure 5 ( ) to which said reference-letter relates.

Remarks.

The first portion of the Examiner's letter is not understood, as there are no modifications referred to in lines 6 to 26 of page 3. A reconsideration of the claims is requested, for the reason that it is believed that the references cited do not anticipate any of the claims. In both of the references cited a rack-bar extending transversely of the center of rotation of the computing chart serves, by means of engagement with a pinion at the axis of the computing chart, to rotate the latter. This is entirely different from applicant's construction, and it is not seen that the references are pertinent to the issue. Certainly, the references neither singly nor taken together anticipate the structure set forth in the claims, and there can hardly be any question that the construction which applicant shows is a substantial improvement in the art. It is hoped that all the claims may be allowed.

Very respectfully,

DYRENFORTH & DYRENFORTH, *Attorneys.*

Chicago, Oct. 21, 1899.

204 2–260.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR, E. B. C.
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *October* 27, 1899.
Mailed " " "

A. B. Hayden, care of Dyrenforth & Dyrenforth, city:

Please find below a communication from the Examiner in charge

of your application, for "Computing Scales," filed Sept. 8, 1899, Ser. No. 729,876.

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

This application has been carefully examined in connection with the amendment filed Oct. 23, 1899.

The section, of which illustration was called for in the last office letter, refers to the computing chart; as described in lines 17 to 19, page 3, the computations occur only directly above the pound numbers of the weight index. A computing chart presenting this peculiarity has not been shown in the drawings and it is desirable that it should be shown.

Claims 1, 8 and 9 are again rejected upon the references of record, it being held that it would not involve invention to arrange upon the vertical shaft of Turnbull's scale a computing chart and enclosing case having the characteristics of Smith's scale.

Claims 2 and 3, before rejected, as well as claims 4, 5, 6 and 7 are considered allowable, so far as at present advised.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

205 B. Application of Austin B. Hayden. No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents:

SIR: Please amend the above-entitled application as follows:

√ Strike out claims 1, 8 and 9 and renumber the remaining claims.

Remarks.

These claims are cancelled, not because considered unallowable, but because it is not desired to prosecute an appeal, in view of the fact that the allowed claims appear to cover the invention as it would be constructed in practice. The cancellation is made, therefore, without prejudice to the claims which remain.

Very respectfully,

DYRENFORTH & DYRENFORTH, *Attorneys.*

Chicago, Dec. 7, 1899.

206 2–260.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Jan.* 22, 1900.
Mailed " " "

A. B. Hayden, care of Dyrenforth & Dyrenforth, city:

Please find below a communication from the Examiner in charge of your application, Ser. No. 729876, filed Sept. 8, 1899, for "Computing Scales."

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

This application has been considered in connection with the amendment filed Jan. 4, 1900.

Lines 17–19 of page 3 of the specification is not supported by the showing, since computations are shown in Fig. 2, not only directly above the pound numbers, but also intermediate such.

The claims now in the case seem to be allowable so far as present advised.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

207 Application of Austin B. Hayden. No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents.

C. SIR: In the matter of the above-named application we hereby amend as follows:

✓ Page 3, *strike out the last paragraph and insert, in lieu thereof, the following paragraph:*

C'. "For economy of space certain computations only of each horizontal circumferential column are written out. The spaces between the written numbers of each column are graduated to pennies, so that the exact cost for any given weight may be readily computed. Thus in Figure 2 directly above the mark c indicating

5 pounds 4 ounces, and opposite the price-index number "4," occurs the penny graduation c^1 indicating that one cent is to be added to 20 cents to give the cost of 5 pounds 4 ounces."

Very respectfully,
DYRENFORTH, DYRENFORTH & LEE,
Attorneys.

Chicago, Jan. 30, 1900.

208 2-260.

Room 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Feb.* 13, 1900.
Mailed " " "

A. B. Hayden, care of Dyrenforth & Dyrenforth, city:

Please find below a communication from the Examiner in charge of your application, Ser. No. 729,876, filed Sept. 8, 1899, for "Computing Scales."

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

The amendment filed Feb. 2, 1900, does not overcome the objection of the last office letter. Lines 17–19 of page 3 of the specification, state "for economy of space only those computations occurring directly before the pound numbers of the weight index are written out. Now referring to Fig. 2, it will be seen that this statement is not supported by the showing. If it were true, above the 5 pound mark in the price columns, for 2c., 3c., 4c., 5c., etc., would appear the values 10c., 15c., 20c., 25c., etc., and above the 6 pound mark would appear 12c., 18c., 24c., 30c., etc., and intermediate these graduations no numbers would appear. However, the figure shows in the 3c. column between 18c. and the point at which 15c. should appear, according to the statement quoted, the number 16. And in the 4c. column between 20c. and 24c. appears the number 22, and so on in the other price columns. It must be obvious that the statement quoted and the drawing cannot both be correct.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

209 Application of Austin B. Hayden. No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents.

SIR: Our firm name has been changed to Dyrenforth, Dyrenforth & Lee, the individual members of the firm being the same as those mentioned in the power of attorney in the above entitled case. We therefore respectfully request that the firm name Dyrenforth, Dyrenforth & Lee be recognized and substituted for Dyrenforth & Dyrenforth in all correspondence relating to the said case. This notice is filed as the result of suggestions contained in Office Letter No. 18543, Feb. 5, 1900.

Very respectfully,
DYRENFORTH & DYRENFORTH, *Attorneys.*

Chicago, Feb. 7, 1900.

Application of Austin B. Hayden. No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents.

SIR: The last official letter is not understood. Our last amendment canceled the bottom one of the then remaining paragraphs of page 3, and inserted, in lieu thereof, a new paragraph, in which the language quoted by the Examiner does not appear.

It is thought that the direction to cancel this paragraph has been in some way misunderstood.

Very respectfully,
DYRENFORTH, DYRENFORTH & LEE,
Attorneys.

Chicago, Feb. 17, 1900,

210 2–181.

Serial No. 729,876.

Issue Division.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

DEPARTMENT OF THE INTERIOR,
U. S. PATENT OFFICE.
WASHINGTON, D. C., *March* 7, 1900.

Austin B. Hayden, care of Dyrenforth, Dyrenforth & Lee, city.

SIR: Your Application for a Patent for an Improvement in Computing Scales Filed Sept. 8, 1899, has been examined and Allowed.

The final fee, Twenty Dollars, must be paid, and the Letters Patent bear date as of a day not later than six months from the time of this present notice of allowance.

If the final fee is not paid within that period the patent will be withheld, and your only relief will be by a renewal of the application, with additional fees, under the provisions of Section 4897, Revised Statutes. The office aims to deliver patents upon the day of their date, and on which their term begins to run; but to do this properly applicants will be expected to pay their final fees at least twenty days prior to the conclusion of the six months allowed them by law. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will consume the intervening time, and such work will not be done until after payment of the necessary fees.

When you send the final fee you will also send, distinctly and plainly written, the name of the inventor and title of invention as above given, date of allowance (which is the date of this circular), date of filing, and, if assigned, the names of the assignees.

If you desire to have the patent issue to assignees, an assignment containing a request to that effect, together with the fee for recording the same, must be filed in this office on or before the date of payment of final fee.

Additional copies of Specifications and Drawings will be charged for at the following rates: Single Copies, uncertified, 10 cents each. The money should accompany the order.

Very respectfully,

C. H. DUELL,
Commissioner of Patents.

[Printed on right margin:] ☞If payment is made by check or draft, the credit allowed is subject to the collection of the same.

[Printed on left margin:] The within title is that given by the Examiner in charge, as most appropriate to your invention. Should you desire a change in the same, satisfactory reasons must be given therefor on or before the payment of the final fee.

[Printed across face:] ☞In remitting the final fee give the serial number at the head of this notice.

☞After allowance, and prior to payment of the final fee, applicants should carefully scrutinize the description to see that their statements and language are correct, as mistakes not incurred through the fault of the office, and not affording legal grounds for reissues, will not be corrected after the delivery of the letters patent to the patentee or his agent.

211

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *March* 22, 1900.

Hon. C. H. Duell, Commissioner of Patents.

SIR: Permission is respectfully asked for the withdrawal of application No. 729876, of Austin B. Hayden for Computing Scales, filed Sept. 8, 1899, and allowed March 7, 1900. This withdrawal is asked in view of a possible interference.

The final fee has not yet been paid on the application.

Very respectfully, GEO. L. MORTON,
Examiner, Div. 36.

Approved
Mar. 22, 1900.
C. H. DUELL,
Commissioner.

Case
Withdrawn from Files of
Issue and Gazette Division,
M'ch 22, 1900. J. W. B.

212 2–260.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *March* 31, 1900.
Mailed " " "

A. B. Hayden, care of Dyrenforth & Dyrenforth, city:

Please find below a communication from the Examiner in charge of your application, Ser. No. 729876, filed Sept. 8, 1899, for "Computing Scales."

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

In view of a possible interference, and in conformity with Rule 96, the following claim is suggested to applicant:

"In a device of the class described, the combination with two members, a vertical cylinder having graduations, and an indicator cooperating with said graduations, one of these members being revoluble with reference to the other about a vertical axis, of a weight receptacle operatively connected to impart rotation to the revoluble member, and a spring within the cylinder connected to the weight receptacle and tending to resist the depression of the latter."

The part *b'* of applicant's device is regarded as an indicator, and if applicant sees fit, to insert the suggested claim it would be well to describe the cross-hair *b'* as an indicator in his specification, say, by inserting after "wire" in line 3 of page 3 of the specification, the words *or indicator.*

If applicant intends to insert the suggested claim he should do so within twenty days from date. If the claim is not inserted within that time it will be considered that "such failure or refusal shall be taken without further action as a disclaimer of the invention covered by the claim." (Rule 96.) If the claim is inserted, a supplemental oath should be filed, as provided by Rule 48.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

213 2–181.

Serial No. 729,876.

Issue Division.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

DEPARTMENT OF THE INTERIOR,
U. S. PATENT OFFICE,
WASHINGTON, D. C., *April* 25, 1900.

Austin B. Hayden, care of Dyrenforth, Dyrenforth & Lee, city.

SIR: Your Application for a Patent for an Improvement in Computing Scales Filed Sept. 8, 1899, has been examined and Allowed.

The final fee, Twenty Dollars, must be paid, and the Letters Patent bear date as of a day not later than Six Months from the time of this present notice of allowance.

If the final fee is not paid within that period the patent will be withheld, and your only relief will be by a renewal of the application, with additional fees, under the provisions of Section 4897, Revised Statutes. The Office aims to deliver patents upon the day of their date, and on which their term begins to run; but to do this properly applicants will be expected to pay their final fees at least Twenty Days prior to the conclusion of the six months allowed them by law. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will consume the intervening time, and such work will not be done until after payment of the necessary fees.

When you send the final fee you will also send, distinctly and plainly written, the name of the inventor and title of invention as above given, date of allowance (which is the date of this circular), date of filing, and, if assigned, the names of the assignees.

If you desire to have the patent issue to Assignees, an assignment containing a Request to that effect, together with the Fee for recording the same, must be filed in this Office on or before the date of payment of final fee.

Additional copies of Specifications and Drawings will be charged for at the following rates: Single Copies, uncertified, 10 cents each. The money should accompany the order.

Very respectfully,

C. H. DUELL,
Commissioner of Patents.

[Printed on right margin:] ☞If payment is made by check or draft, the credit allowed is subject to the collection of the same.

[Printed on left margin:] The within title is that given by the Examiner in charge, as most appropriate to your invention. Should you desire a change in the same, satisfactory reasons must be given therefor on or before the payment of the final fee.

[Printed across face:] ☞In remitting the final fee give the serial number at the head of this notice.

☞After allowance, and prior to payment of the final fee, applicants should carefully scrutinize the description to see that their statements and language are correct, as mistakes not incurred through the fault of the office, and not affording legal grounds for reissues, will not be corrected after the delivery of the letters patent to the patentee or his agent.

214

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *July* 7, 1900.

Hon. Chas. H. Duell, Commissioner of Patents.

SIR: In view of a possible interference, permission to withdraw from issue the application of A. B. Hayden, for "Computing Scales," filed Sept. 8, 1899, No. 729,876, and passed to issue April 24, 1900, is respectfully requested.

The final fee has not yet been paid.

Very respectfully,

GEO. L. MORTON,
Examiner, Div. 36.

Approved
July 7, 1900,
C. H. DUELL,
Commissioner.

Case
Withdrawn from Files of
Issue and Gazette Division,
July 7, 1900. J. W. B.
A. R.

215 2–260.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR, E. B. C.
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Aug.* 13, 1900.
Mailed " " "

A. B. Hayden, care of Dyrenforth, Dyrenforth & Lee, city:

Please find below a communication from the Examiner in charge of your application, Computing Scales, filed Sept. 8, 1899, Ser. No. 729,876.

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

In view of a possible interference, and in conformity with Rule 96, the following claim is suggested to applicant:

In a spring balance, the combination of a non-rotating frame providing an external casing and having means for supporting it from above, weighing springs secured at their upper ends to rigid parts of said frame, a vertically movable runner which is suspended from the lower ends of said springs and is provided with means to support the load, a chart drum rotatably mounted within said casing on a vertical axis and having external horizontal rows of value indicating figures computed at different rates, said casing having a sight opening through which portions of said value indicating rows may be seen, and corresponding rate indicating figures on the outer face of said frame adjacent to the value indicating rows on the chart drum and mechanism for translating the vertical movement of the runner into the rotary movements of the chart drum.

If it is applicant's intention to insert the suggested claim, he will do so within twenty days from date, and in this connection his attention is called to the second sentence of Rule 96. If the claim is inserted a description of the lugs and means for supporting the casing from above should be inserted in the specification, and a supplemental oath should be filed, as provided by Rule 48.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

216 Application of Austin B. Hayden. No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents.

SIR: In the matter of the above-entitled application, please *amend* as follows:

Page 2, last complete paragraph, line 3 thereof, after "standard" insert "through the medium of lugs h."

Add the following claim:

D′. "6. In a spring balance, the combination of a non-rotating frame providing an external casing and having means for supporting it from above, weighing springs secured at their upper ends to rigid parts of said frame, a vertically movable runner which is suspended from the

Per E. lower ends of said springs and is provided with a depending means

to support the load, a chart drum rotatably mounted within said casing on a vertical axis and having external horizontal rows of value indicating figures com-

Per E. puted at different rates, said casing having a slight sight opening through which portions of said value indicating

rows may be seen, and corresponding rate indicating figures on the outer face of said frame adjacent to the value indicating rows on the chart drum, and mechanism for translating the vertical movement of the runner into the rotary movements of the chart drum."

Insert E′.

Please apply the letter h to the lugs supporting the outer casing, Figs. 1 & 2 of drawings.

Very respectfully,

DYRENFORTH, DYRENFORTH & LEE,
Attorneys.

Chicago, Aug. 24, 1900.

217 2–260.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Sept.* 7, 1900.
Mailed " " "

A. B. Hayden, care of Dyrenforth & Dyrenforth, city.

Please find below a communication from the Examiner in charge of your application, Ser. No. 729876, filed Sept. 8, 1899, for "Computing Scales."

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

Upon consideration of claim 6 preparatory to the declaration of interference it is found that the claim does not clearly and patentably distinguish from the scale shown in the patent to Herr, No. 651801, June 12, 1900, Price Scales, and it is therefore necessary to reject the claim. It is believed, however, that the claim may be rendered allowable by inserting *depending* before "means" in line 6. In line 10 "slight" should be *sight*.

If it is applicant's intention to amend the claim, as suggested, he will do so within ten days from date.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

218 2–260.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Oct.* 8, 1900.
Mailed " " "

A. B. Hayden, care of Dyrenforth & Dyrenforth, city:

Please find below a communication from the Examiner in charge

of your application, Ser. No. 729876, filed Sept. 8, 1899, for "Computing Scales."

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

In view of possible interference, and in compliance with Rule 96, the following claim is suggested to applicant:

In a spring balance, the combination of an external non-rotating frame adapted to be supported from above, weighing springs secured at their upper ends to rigid parts of said frame, a vertically movable runner which is suspended from the lower ends of said springs and is provided at its lower end with means to support the load beneath it, a chart drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value indicating figures computed at different rates, said external frame being apertured whereby portions of said value indicating rows may be seen, and corresponding rate indicating figures on the outer face of said frame adjacent to the value indicating rows on the chart drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart drum, substantially as specified.

If it is applicant's intention to insert the suggested claim he will do so within fifteen days from date, and in this connection applicant's attention is called to the second sentence of Rule 96.

Applicant's attention is again called to the rejection of claim 6, as set forth in the office letter of Sept. 4, 1900.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

219 E. Application of Austin B. Hayden. No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents.

SIR: In the matter of the above-entitled application, please amend as follows:

✓ *Claim 6, line 6, before "means" insert* "DEPENDING;"
✓ *and in line 10 change "slight" to* "SIGHT."
✓ *Add the following claim:*

E'. "7. In a spring balance, the combination of an external non-rotating frame adapted to be supported from above, weighing springs secured at their upper ends to rigid parts of said frame, a vertically movable runner which is suspended from the lower ends of said springs and is provided at its lower end with means to support the load beneath it, a chart drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value indicating figures computed at different rates, said external frame being apertured

whereby portions of said value indicating rows may be seen, and corresponding rate indicating figures on the outer face of said frame adjacent to the value indicating rows on the chart drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart drum, substantially as specified."

Insert F².>

Very respectfully,
DYRENFORTH, DRYENFORTH & LEE,
Attorneys.

Chicago, Oct. 18, 1900.

220 2–079.

Interference Card.

Interference No. —, Paper No. 18.

Name, Hayden, A. B.
Serial No. 729876.
Title, Computing Scales.
Filed, Sept. 8, 1899.
Interference with Culmer 21590.
Stimpson 735,947.
Decisions of—
Primary Examiner, ——, dated Oct. 22.
Ex'r of Interferences, ——, " ——.
Board, ——, " ——.
Commissioner, ——, " ——.

Remarks.

Decision in favor of Hayden, M'ch 5, 1901.

This card should be placed in each application or patent involved in interference in addition to the interference letters by primary examiner.

221 2–260.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR, E. B. C.
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Oct.* 24, 1900.
Mailed " " "

Austin B. Hayden, care of Dyrenforth, Dyrenforth & Lee, Washington, D. C.:

Please find below a communication from the Examiner in charge of your application, "Computing Scales," filed Sept. 8, 1899, Ser. No. 729,876.

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

Inasmuch as claim 6 of your application is not patentably different from claim 7 involved in an interference declared this day, its allowance will be held subject to the award of priority in the interference proceedings.

E. C. HOUGH,
Acting Examiner, Div. 36.

222 2–213.

Forwarded from Div. — to Examiner of Interferences.

Paper No. —

(Interference.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Oct.* 24, 1900.
Mailed " " "

U. S. Patent Office,
Oct. 22, 1900,
Division 36.

No. 20,795.

Austin B. Hayden, care of Dyrenforth, Dyrenforth & Lee, Washington, D. C.:

Please find below a copy of a communication from the Examiner

concerning your application for "Computing Scales," filed Sept. 8, 1899, Ser. No. 729876.

Very respectfully,

C. H. DUELL.
F. I. ALLEN,
Commissioner of Patents.

Room No. 261.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Your case, above referred to, is adjudged to interfere with others, hereafter specified, and the question of priority will be determined in conformity with the Rules.

The statement demanded by Rule 110 must be sealed up and filed on or before the 16th day of November, 1900, with the subject of the invention, and name of party filing it, indorsed on the envelope.

The subject-matter involved in the interference is

In a spring balance, the combination of an external non-rotating frame adapted to be supported from above, weighing springs secured at their upper ends to rigid parts of said frame, a vertically movable runner which is suspended from the lower ends of said springs
223 and is provided at its lower end with means to support the load beneath it, a chart drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value indicating figures computed at different rates, said external frame being apertured whereby portions of said value indicating rows may be seen, and corresponding rate indicating figures on the outer face of said frame adjacent to the value indicating rows on the chart drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart drum.

The above is claim 7 of your application and is also a claim ^{2}A in an application of John W. Culmer, of Cleveland, Ohio (assigned to The National Computing Scale Co., of same place), whose attorneys are Thurston & Bates, of Cleveland, Ohio, and a claim ^{7}A in an application of Walter F. Stimpson, of Detroit, Mich., whose attorneys are Thos. S. Sprague & Son, Wayne Co. Bank Bldg., Detroit, Mich.

E. C. HOUGH,
Acting Examiner, Div. 36.

224 F. Application of Austin B. Hayden. No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents.

SIR: In the matter of the above entitled application, please amend as follows:

√ Page 4, first complete paragraph, line 5 thereof, change "F and F'" to "f AND f'."

√ Line 3, from the bottom of page, after "rod," insert

"The spiral of the rod E may be regarded as a motion-translating member, and the anti-friction rollers f, f^1 engaging said spiral may be regarded as an anti-friction member co-acting with said spiral. It is necessary that one of said motion-translating members

F'. be supported by the spring of the A scale to have a simple vertical movement, and member A that the other motion-translating A shall be connected directly to the computing cylinder to impart rotary motion thereto. Thus, one of said motion-translating members moves with the computing-cylinder about a vertical axis, while the other acts as a spring-supported runner which engages the cylinder-carried or connected member and has its own vertical movement translated into a rotary movement."

225 *Add the following claims:*

F². "8. In a spring-balance, the combination of an external non-rotating frame, weighing-springs supported from said frame, a vertically movable runner which is suspended from said springs and is provided at its lower end with means to support the load beneath it, a chart-drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said external frame being provided with a vertical aperture, whereby portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer surface of said frame adjacent to said aperture and corresponding with said value-indicating rows on the chart-drum, and mechanism for translating the vertical movements of the A runner into the rotary movement of the chart-drum."

"9. In a spring-balance computing-scale, the combination of a suitably supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing and provided with circumferential rows of cost-computations, a central vertical spiral-equipped motion-translating rod, a spring supported from the casing, a motion translating anti-friction member engaging said spiral, one of said motion-translating devices being supported by said spring to move vertically and the other connected with said cylinder to transmit rotary motion to said cylinder, and a load-pan supported from said spring-supported motion-translating member, substantially as and for the purpose set forth."

Insert G'. >

226 *Remarks.*

We respectfully request that the foregoing amendment be entered and considered by the primary examiner when this case is returned to his jurisdiction. Proposed claim 8 is substantially like claim 7, certain unnecessary features of claim 7 being omitted. This will be evident by a comparison of the two claims. Proposed claim 9 is limited to the central spiral rod and anti-friction means for engaging the spiral, one of said parts being connected with the computing cylinder to rotate therewith and the other having a vertical movement but being incapable of rotation about the vertical axis, and having its vertical movement translated into *into* a rotary movement through the medium of ~~A~~ the spiral and the anti-friction member engaging the spiral. This amendment is fully warranted by the last complete paragraph on page 4 of the specification, and the examiner will readily see that ~~A~~ the claim is allowable over the references.

Very respectfully,

DYRENFORTH, DRYENFORTH & LEE,
Attorneys.

Chicago, Jan. 23, 1901.

227 Application of Austin B. Hayden. Serial No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents:

SIR: The interference in which this case has been involved having been decided in applicant's favor, consideration of the amendment dated January 23, 1901, is requested.

Very respectfully,

DYRENFORTH, DYRENFORTH & LEE,
Attorneys.

Chicago, Mar. 27, 1901.

228 2–260.

Room No. 256.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *April* 12, 1901.
Mailed " " "

Austin B. Hayden, care of Dyrenforth & Dyrenforth, city:

Please find below a communication from the Examiner in charge of your application, Ser. No. 729,876, filed Sept. 8, 1899, for "Computing Scales."

F. I. ALLEN,
Commissioner of Patents.

This application has been examined in view of the amendment filed Jan. 25, 1901, and entered March 29, 1901.

Claims 8 and 9, submitted in said amendment are regarded as allowable, so far as at present advised.

In view of a possible interference, the application will be withheld from issue for fifteen days from date. If at the end of that time no action is taken by the Office, its attention should be called to the case.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

229 2–260.

Room No. 256.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *April* 25, 1901.
Mailed " " "

A. B. Hayden, care of Dyrenforth, Dyrenforth & Lee, city:

Please find below a communication from the Examiner in charge of your application, Ser. No. 729876, filed Sept. 8, 1899, for "Computing Scales."

F. I. ALLEN,
Commissioner of Patents.

In view of a possible interference, and in conformity with Rule 96, the following claims are suggested to applicant:

In a price scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, and a screw connection intermediate said rod and the rotatable cylinder.

In a price scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, said rod being provided with a screw thread throughout a portion of its length, and rollers carried by the rotatable cylinder and bearing directly upon said screw threaded portion of the rod.

If it is applicant's intention to insert the suggested claims, he will do so within fifteen days from date, and in this connection his attention is called to the second sentence of Rule 96.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

230 G. Application of Austin B. Hayden. Serial No. 729,876. Filed Sept. 8, 1899. Computing Scale.

To the Hon. Commissioner of Patents.

SIR: In the above-entitled application, please amend by adding the following claims:

"10. In a price scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, and a screw connection intermediate said rod and the rotatable cylinder."

G'. "11. In a price scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, said rod being provided with a screw thread throughout a portion of its length, and rollers carried by the rotatable cylinder and bearing directly upon said screw threaded portion of the rod."

Very respectfully,
DYRENFORTH, DYRENFORTH & LEE,
Attorneys.

Chicago, May 14, 1901.

231 2–079.

Interference Card.

Interference No. —, Paper No. 26.

Name, Austin B. Hayden.
Serial No. 729,876.
Title, Computing Scales.
Filed Sept. 8, '99.
Interference with S. W. Finch. 49,937.
Decisions of—
Primary Examiner, ——, dated May 24, '01.
Ex'r of Interferences, ——, " ——.
Board, ——, " ——.
Commissioner, ——, " ——.

Remarks.

Decided in favor of Hayden June 22, '01.
Decision of June 22, '01, declared final Nov. 4, '01.

This card should be placed in each application or patent involved in interference in addition to the interference letters by Primary Examiner.

232 2–260.

Room 256.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Paper No. —.

All communications respecting this application should give the serial number, date of filing, and title of invention.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *May* 29, 1901.
Mailed " " "

A. B. Hayden, care of Dyrenforth, Dyrenforth & Lee, city:

Please find below a communication from the Examiner in charge of your application, Ser. No. 729,876, filed Sept. 8, 1899, for "Computing Scales."

F. I. ALLEN,
Commissioner of Patents.

The allowance of claims 1, 2, 6, 7, 8 and 9 is held subject to the award of priority upon issue 1 of the interference proceeding this day declared; the allowance of claims 3 and 4 is held subject to the award of priority upon issue 2 of the same interference.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

233 2-213.

Forwarded from Div. — to Examiner of Interferences.
Copy sent Assignee.

Paper No. —.

(Interference.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *May* 29, 1901.
Mailed " " "

U. S. Patent Office,
Mar. 24, 1901,
Division 36.

Austin B. Hayden, ass'r to Andrew O. Butler, of Oak Park, Ill., care of Dyrenforth, Dyrenforth & Lee, city:

Please find below a copy of a communication from the Examiner concerning your application, Ser. No. 729876, filed Sept. 8, 1899, for "Computing Scales."

Very respectfully,

F. I. ALLEN,
Commissioner of Patents.

Interference No. 21,174.

Room No. —.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

Your case, above referred to, is adjudged to interfere with others, hereafter specified, and the question of priority will be determined in conformity with the Rules.

The statement demanded by Rule 110 must be sealed up and filed on or before the 20 day of June, 1901, with the subject of the invention, and name of party filing it, indorsed on the envelope. The interference number should also be endorsed thereon. The subject-matter involved in the interference is

Issue 1.

In a price scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably
234 mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, and a screw connection intermediate said rod and the rotatable cylinder.

Issue 2.

In a price scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, said rod being provided with a screw thread throughout a portion of its length, and rollers carried by the rotatable cylinder and bearing directly upon said screw threaded portion of the rod.

"The above issues are your claims 10 and 11 respectively, and claims 15 and 16 respectively of the application of Stanley W. Finch, of Washington, D. C., whose attorneys are Dodge & Sons, of the same place.

GEO. L. MORTON,
Examiner, Div. 36.

F. F. R.

235 2–181.

Serial No. 729,876.

Issue Division.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

DEPARTMENT OF THE INTERIOR,
U. S. PATENT OFFICE,
WASHINGTON, D. C., *Nov.* 19, 1901.

Austin B. Hayden, Ass'or, care of Dyrenforth, Dyrenforth & Lee, city.

SIR: Your Application for a Patent for an Improvement in Computing Scales Filed Nov. 19, 1901, has been examined and Allowed.

The final fee, twenty dollars, must be paid, and the Letters Patent bear date as of a day not later than six months from the time of this present notice of allowance.

If the final fee is not paid within that period the patent will be withheld, and your only relief will be by a renewal of the application, with additional fees, under the provisions of Section 4897, Revised Statutes. The Office aims to deliver patents upon the day of their date, and on which their term begins to run; but to do this properly applicants will be expected to pay their final fees at least twenty days prior to the conclusion of the six months allowed them by law. The printing, photolithographing, and engrossing of the several patent parts, preparatory to final signing and sealing, will consume the intervening time, and such work will not be done until after payment of the necessary fees.

When you send the final fee you will also send, distinctly and plainly written, the name of the inventor and title of invention

as above given, date of allowance (which is the date of this circular), date of filing, and, if assigned, the names of the assignees.

If you desire to have the patent issue to assignees, an assignment containing a request to that effect, together with the fee for recording the same, must be filed in this Office on or before the date of payment of final fee.

Additional copies of Specifications and Drawings will be charged for at the following rates: Single Copies, uncertified, 10 cents each. The money should accompany the order.

Very respectfully,

C. H. DUELL,
Commissioner of Patents.

[Printed on right margin:] ☞If payment is made by check or draft, the credit allowed is subject to the collection of the same.

[Printed across face:] ☞In remitting the final fee give the serial number at the head of this notice.

☞After allowance, and prior to payment of the final fee, applicants should carefully scrutinize the description to see that their statements and language are correct, as mistakes not incurred through the fault of the office, and not affording legal grounds for reissues, will not be corrected after the delivery of the letters patent to the patentee or his agent.

236 Serial 729,876.

Hayden, Austin B.

No Further Assignments

Found of record effecting this application.
Examined up to and including Mar. 10, 1902.
This certificate dated Mar. 15, 1902.

F. V. BOOTH,
Chief of Div. D.

Application assigned to Butler and by Butler reassigned to Hayden.

237 2-075.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *March* 10, 1902.

To the chief of the assignment division:

You will please make a statement of what is shown in the "Assignment Records" relating to the condition of the title to the alleged invention involved in the application referred to in the paper hereto annexed. You will attach such statement to such annexed paper and transmit the same to the "Docket Clerk" on or before the — day of ——, 190–.

F. I. ALLEN,
Commissioner of Patents.

Serial No. 729,876, Paper No. 1.

Rev. & Power of Att'y by Ass'ee.

In re Application of Austin B. Hayden. Serial No. 729,876. Filed Sept. 8, 1899. Improvements in Computing Scales.

Hon. Commissioner of Patents.

SIR: The undersigned, assignee of the entire interest in the above entitled invention and application, hereby revokes all powers of attorney heretofore given in said application and appoints Messrs. Church & Church (a firm composed of Melville Church and Joseph B. Church) of Washington, D. C., its attorneys in the prosecution of said application, with full power of substitution and revocation and with power to amend the said application, to receive the patent when issued and generally to take all such steps as may be necessary to protect the undersigned's interests in said application.

COMPUTING SCALE COMPANY
OF AMERICA,
[COMPANY SEAL.] By E. CANBY, *President.*

Attest:
O. O. OZIA, *Secretary.*

238 2-069.

Serial No. 729,876, Paper No. 2.

Dated —— —, 1902.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

M. A. W.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *March* 17, 1902.

SIR: You are hereby informed that your power of attorney has been revoked in the matter of the application of Austin B. Hayden, for Letters Patent for an improvement in Computing Scales, No. 729876, filed September 8, 1899.

Very respectfully,
F. I. ALLEN,
Commissioner.

DYRENFORTH, DYRENFORTH & LEE,
Washington, D. C.

239 2–070.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

M. A. W. DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *March* 17, 1902.

SIR: You are hereby informed that your power of attorney has been accepted in the matter of the application of Austin B. Hayden, for Letters Patent for an improvement in Computing Scales, No. 729876, filed September 8, 1899.

Very respectfully, F. I. ALLEN,
Commissioner of Patents.

CHURCH & CHURCH,
Washington, D. C.

240 2–183.

Serial No. 729,876.

Issue and Gazette Division.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *May* 5, 1902.

A. B. Hayden, ass'or, care of Church & Church, city:

SIR: Your application for a patent for an *improvement in* Computing Scales, filed Sept. 8, 1899, has been examined and again *allowed.*

The final fee, *Twenty Dollars,* in the above-entitled case was received May 5, 1902.

Very respectfully, F. I. ALLEN,
Commissioner of Patents.

241 Amount Received,
$20. F.
Chief Clerk.

2–327.

Memorandum of Fee Paid at United States Patent Office.

(Be careful to give correct serial No.)

Serial No. 729,876, ——, 190–.

Inventor:
Austin B. Hayden.

Patent to be issued to
Assignee.

Name of invention as allowed:
Computing Scale.

Date of payment:
May 5, 1902.

Fee:
Final, $20.

Date of filing:
Sept. 8, 1899.

Date of circular of allowance:
November 19, 1901.

The Commissioner of Patents will please apply the accompanying fee as indicated above.

CHURCH & CHURCH, *Attorney-*.

Send Patent to
CHURCH & CHURCH,
63 McGill Bdg.,
Washington, D. C.
Patent Law.

242 Div. 36.

(Serial Number), 729,876. 1899. (Ex'r's Book), 36. $\frac{624}{191}$.

Reissue —.
Patent No. 700,919.
Austin B. Hayden, ass'or to Computing Scale Company of America, a corp. of N. J.,
Of Chicago,
County of ——,
State of Illinois.
Invention: Computing Scales.

Parts of application filed.
- Petition, Sept. 8, 1899.
- Affidavit, " " "
- Specification, " " "
- Drawing, 2 sheets, " " "
- B. P., Sept. 15, 1899.
- Model, not req'd.
- Specimen, blue print,
- First fee, cash, $15, Sept. 8, 1899.
- " " cert., ——.

App. filed complete Sept. 8, 1899.
Examined Apr. 24, 1900. Geo. L. Morton, Exam.
" Mar. 5, 1900. Geo. L. Morton, Ex'r. Withdrawn and reallowed May 5, 1902.
Examined Nov. 18, 1901. Geo. L. Morton, Ex'r. ——, 190–. ——, 190–.
Countersigned: J. W. Babson, For Commissioner. J. W. Babson, For Commissioner.
Mar. 6, 1900.
Notice of allowance, M'ch 7, 1900.
" " " Apr. 25, 1900.
Notice of allowance, ——, 1900. November 19, 1901.
Final fee, cash, ——, 190–. $20, May 5, 1902.
" " cert., ——, 190–. ——, 190–.
Patented, May 27, 1902.
Attorney-, Dyrenforth, Dyrenforth and Lee.
Address, ——.
Associate attorney-, Church & Church. Address, City.
Name, —— ——.
Patent No. —.
Serial number —.
Date of patent, ——.

243 73. Measuring Instruments.
Price Scales.

1899.

Contents.

1/ ½. Application, 1 paper[s].* O. K.
1/ 1. Rejection, Oct. 9, 1899.
1/ 2. Amendment A, Oct. 23, 1899.
1/ 3. Rejection, Oct. 27, 1899.
1/ 4. Amendment B, Jan. 4, 1900.
1/ 5. Letter, Jan. 22, 1900.
1/ 6. Amendment C, Feb. 2, 1900.
1/ 7. Letter, Feb. 13, 1900.
1/ 8. Letter, Feb. 16, 1900.
1/ 9. Letter, Feb. 19, 1900.
1/ 10. Letter of withdrawal, M'ch 22, 1900.
1/ 11. Letter, Mar. 31, 1900.
1/ 12. Letter of withdrawal, July 7, 1900.
1/ 13. Letter, Aug. 13, 1900.
1/ 14. Amendment D, Sept. 4, 1900.
1/ 15. Rejection, Sept. 7, 1900.
1/ 16. Letter, Oct. 8, 1900.
1/ 17. Amendment E, Oct. 20, 1900.
1/ 18. Intf. card, Oct. 22, 1900.
1/ 19. Letter, Oct. 24, "
1/ 20. Intf. letter, Oct. 24, "
1/ 21. Amend't F, entered April 1, 1901. Jan. 25, 1901.
1/ 22. Letter, M'ch 29, 1901.
1/ 23. Letter, Apr. 12, 1901.
1/ 24. Letter, Apr. 25, 1901.
1/ 25. Amend't G, May 16, 1901.
1/ 26. Interference card, May 24, 1901.
1/ 26½. Letter, May 29, 1901.
1/ 27. Interference letter.

244 Classification.
M.

1899.

1901.

Contents.

½. Print.
Application, 1 paper [s].* O. K.
1. Rev. & power of att'y, M'ch 8, 1902.
2. Notice revo. & accept., Mar. 17, 1902.
Title: Improvement in Computing Scales.

[*Words and figures enclosed in brackets erased in copy.]

245 In the Supreme Court of the District of Columbia.

In Equity. No. 23,420.

THE COMPUTING SCALE COMPANY OF AMERICA, Complainant,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

"Complainant's Exhibit Certified Copy from Interference Records."

THOMAS DURANT,
[SEAL.] *Notary Public, Special Examiner.*

UNITED STATES OF AMERICA,
DEPARTMENT OF THE INTERIOR,
PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify That the annexed is a true copy from the Records of this office of the Declaration of Interference, October 24, 1900; Judgment against Stimpson, December 7, 1900; and Decision of the Examiner of Interferences, March 5, 1901, in the matter of

Interference Number 20,795.

CULMER
vs.
STIMPSON
vs.
HAYDEN.

Subject-Matter: Scale.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington this 18th day of November in the year of our Lord one thousand nine hundred and three and of the Independence of the United States of America the one hundred and twenty-eighth.

F. I. ALLEN,
[SEAL.] *Commissioner of Patents.*

246 2–252.

Room No. 261.

U. S. Patent Office,
Oct. 22, 1900,
Division 36.

No. 20,795.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Oct.* 22, 1900.

Examiner of Interferences:

An interference is found to exist between the following cases, and in respect to the invention therein specified, to wit:

Cases.

1. John W. Culmer, of Cleveland, Ohio, for Spring Balance Computing Scale, filed June 26, 1900; Ser. No. 21590 (Assigned to The National Computing Scale Co., of Cleveland, O.) whose attorneys are Thurston & Bates, of Cleveland, Ohio.

2. Walter F. Stimpson, of Detroit, Mich., for Scale, filed Nov. 6, 1899; Ser. No. 735947, whose attorneys are Thos. S. Sprague & Son, of Detroit, Mich. (Wayne Co. Bank Bldg.).

3. Austin B. Hayden, of Chicago, Ill., for Computing Scales, filed Sept. 8, 1899; Ser. No. 729876 (Allowed April 25, 1900), whose attorneys are Dyrenforth, Dyrenforth & Lee, of Washington, D. C.

Invention.

In a spring balance, the combination of an external non-rotating frame adapted to be supported from above, weighing springs secured at their upper ends to rigid parts of said frame, a vertically movable runner which is suspended from the lower ends of said springs and is provided at its lower end with means to support the load beneath it, a chart drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value indicating figures computed at different rates, said external frame being apertured whereby portions of said value indicating rows may be seen, and corresponding rate indicating figures on the outer face of said frame adjacent to the value indicating rows on the chart drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart drum

The above issue is claim 7 of the application of Hayden's, claim 7 of Stimpson's, and claim 2 of Culmer's.

E. C. HOUGH,
Acting Examiner, Div. 36.

217 (2–039c.)

Room No. 44.

All communications should be addressed to "The Commissioner of Patents, Washington, D. C."

U. S. Patent Office,
Nov. 17, 1900,
Mailed.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Nov.* 17, 1900.

Interference No. 20,795.

In re Interference
CULMER
v.
STIMPSON
v.
HAYDEN.

Subject-matter: Scale.

Before the Examiner of Interferences.

The preliminary statement filed by Stimpson a junior party, failing to overcome the *prima facie* case made against him by the respective dates of filing applications, judgment on the record of priority of invention is accordingly hereby rendered to the effect that Walter F. Stimpson is not the first inventor of the matter in issue in accordance with the provisions of Rule 114.

Limit of appeal will expire Dec. 7, 1900.

WALTER JOHNSON,
Examiner of Interferences.

248 2–067.

E. M. P.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
WASHINGTON, D. C., *Mar.* 5, 1901.

U. S. Patent Office.
Mailed,
Mar. 5, 1901.

No. 20,795.

In re Interference
CULMER
v.
HAYDEN.

Scale.

Before the Examiner of Interferences.

On the 18th day of February, 1901, Hayden filed a motion for an order, under the provisions of Rule 119, entering judgment against Culmer, the junior party, unless said Culmer should show good and sufficient cause why said judgment should not be entered against him. On the 20th day of February, 1901, an order was made and the parties were notified that a judgment of priority of invention of the matter in issue would be rendered against the said Culmer on the 2d day of March, 1901, for the reason that he is the junior party and has taken no testimony in the case, unless he should on or before that day show good and sufficient cause why the same should not be done. Such time having expired, and no sufficient cause having been shown, judgment of priority of invention is hereby rendered in favor of Austin B. Hayden, in accordance with said order and under the provisions of Rule 119. Limit of appeal from this decision will expire March 25, 1901.

WALTER JOHNSON,
Examiner of Interferences.

250 UNITED STATES PATENT OFFICE.

AUSTIN B. HAYDEN, of Chicago, Illinois, Assignor to Computing Scale Company of America, a Corporation of New Jersey.

Computing-Scale.

Specification Forming Part of Letters Patent No. 700,919, Dated May 27, 1902.

Application Filed September 8, 1899. Serial No. 729,876. (No Model.)

To all whom it may concern:

Be it know that I, Austin B. Hayden, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Computing-Scales, of which the following is a specification.

My invention relates particularly to an improvement in computing-scales of the spring-balance type, my object being especially to increase the computing capacity of scales of this type.

(Here follow diagrams marked pp. 249 & 249*a*.)

In the accompanying drawings, illustrating my invention, Figure 1 is a view in front elevation of a spring-balance computing-scale embodying my improvements in preferred form; Fig. 2, an enlarged broken view of the computing-cylinder and its casing; Fig. 3, a broken vertical sectional view of the same, and Fig. 4 a horizontal section at line 4 of Fig. 3.

A represents a standard, which may be of a variety of forms; B, a vertically-disposed non-rotatable cylindrical casing supported from said standard through the medium of lugs *h;* C, a vertical computing-cylinder journaled in the casing B; D, a load-hanger comprising an upper cross-piece *a*, provided with a threaded stem *a'*, which projects upward through the casing-top and is supplied with nuts a^2 a^3 and is provided also with perforated enlargements a^4, serving to receive downward-projecting guide-pins a^5, spring-coils a^6, and a lower cross-piece a^7; E, a combined load-supporting and cylinder-actuating rod, and F a load-pan or suspended weighing-platform.

The casing-cylinder B is provided with a vertical slot *b*, along one margin of which is a price-index indicating cents per pound. The price-index preferably is numbered from bottom to top, the prices shown ranging from two cents to thirty cents. A fine hair wire *b'* divides the slot longitudinally for convenience in reading.

The computing-cylinder, which revolves as the rod E is drawn downward, is provided with circumferential columns, the lower one of which preferably is graduated to pounds and ounces, the pound-

No. 175.

Comp. Scale Co. v Aut-Scale Co } p. 249

No. 700,919. Patented May 27, 1902.

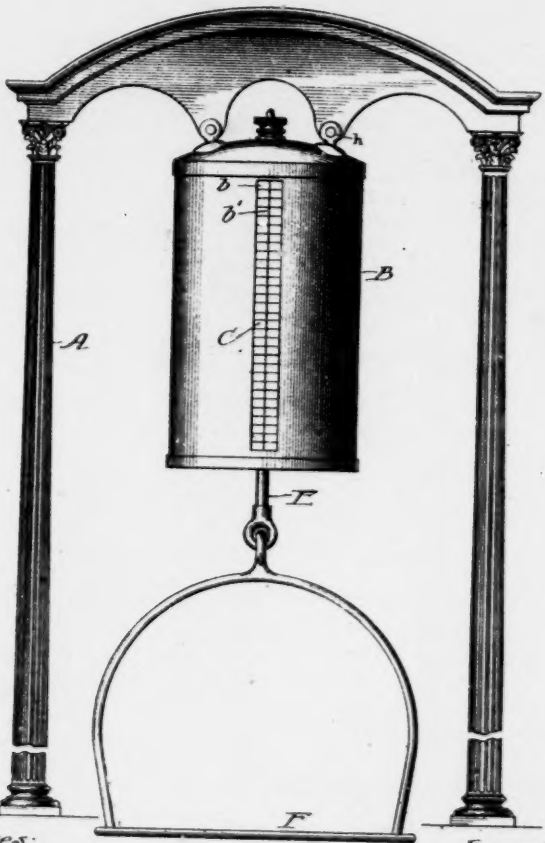
A. B. HAYDEN.

COMPUTING SCALE.

(Application filed Sept. 8, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses:

Frank S. Blanchard

Richard D. Spencer

Inventor:

Austin B. Hayden

By Attorneys

Dyrenforth & Dyrenforth

No. 175.

Comp. Scale Co. v Aut-Scale: CO } p. 249 2

No. 700,919. Patented May 27, 1902.

A. B. HAYDEN.

COMPUTING SCALE.

(Application filed Sept. 8, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

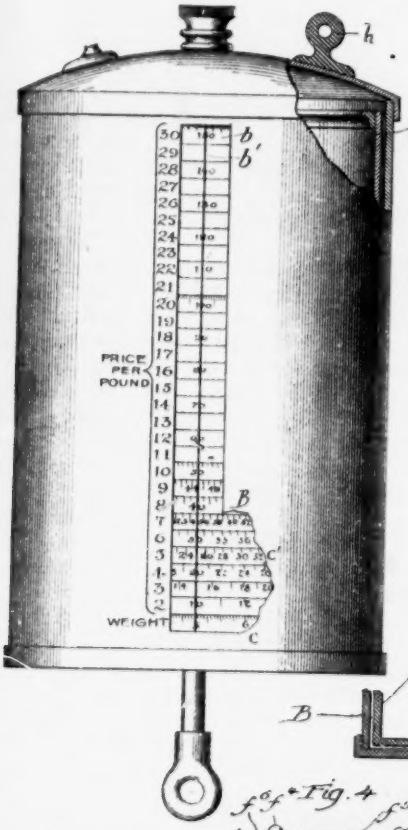


Fig. 3.

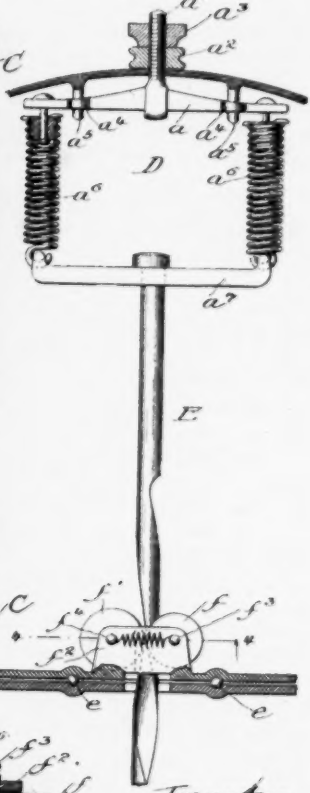
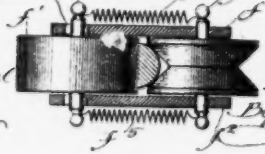
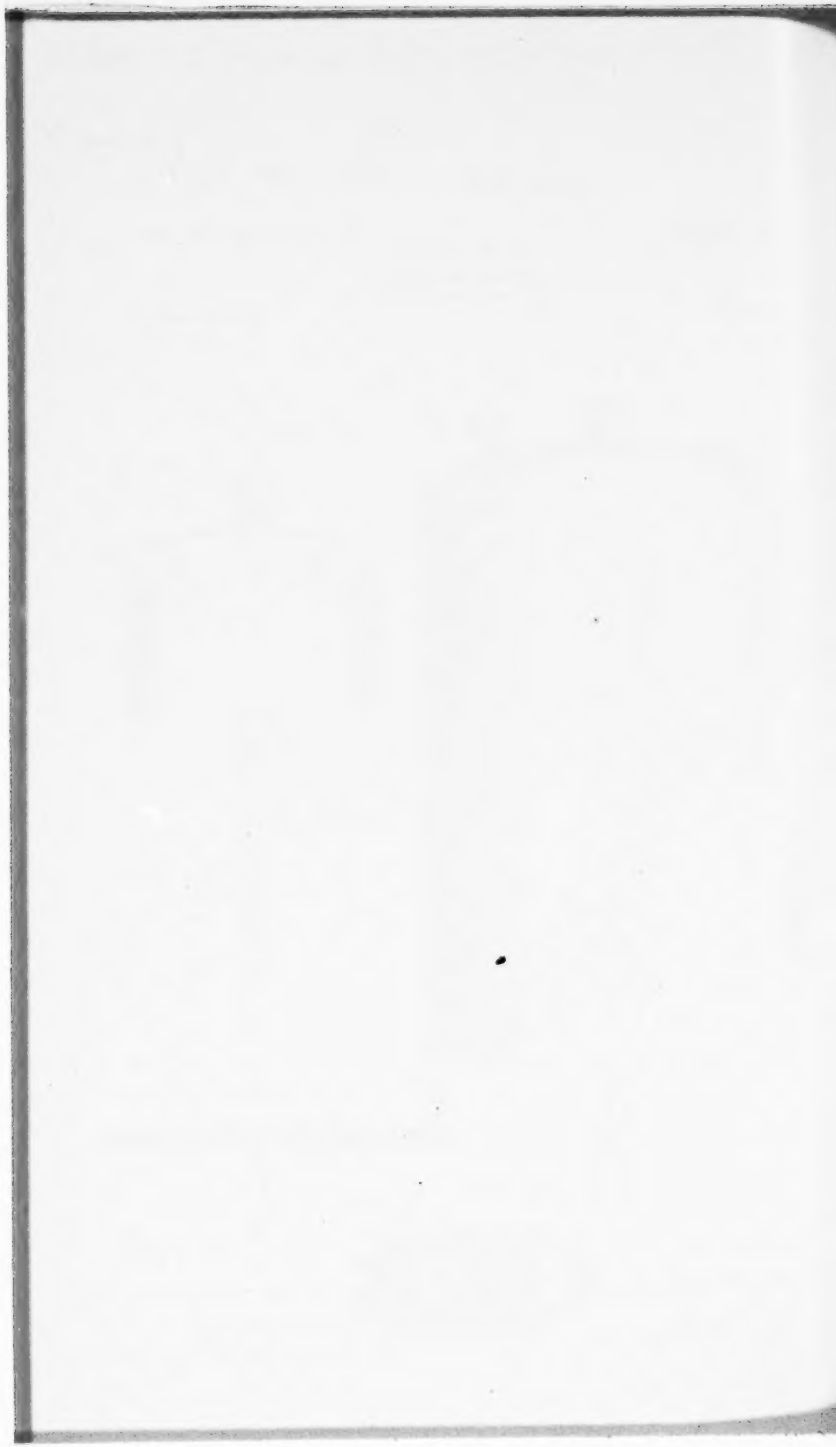


Fig. 4.



Witnesses:
Frank S. Blanchard
Richard J. Spencer

Inventor:
Austin B. Hayden
By Attorneys.
Byron W. Boyington



lines being indicated by numbers. Above the weight-index appear the computations, each computation being set above its appropriate weight-index and opposite its appropriate price-index number. Thus above the weight-index number "5," Fig. 2, and opposite the price-index number "4" occurs the computation "20," which is the cost of five pounds at four cents per pound.

For economy of space certain computations only of each horizontal circumferential column are written out. The spaces between the written number of each column are graduated to pennies, so that the exact cost for any given weight may be readily computed. Thus in Fig. 2 directly above the mark *c*, indicating five pounds four ounces, and opposite the price-index number "4" occurs the penny graduation *c'*, indicating that one cent is to be added to twenty cents to give the cost of five pounds four ounces.

The cylinder C is supported at its base on ball-bearings, which move in a horizontal circular channel on the inner surface of the bottom of the cylinder B. The rod E is provided with a spiral groove of very high pitch, which moves between rollers *f* and *f'*, journaled in lugs f^2, centrally located on the inner surface of the bottom of the cylinder C. The shafts f^3 f^4 of the rollers are connected by springs f^5, and the lugs are provided with slots f^6 to permit yielding.

In the construction shown the spiral of the rod E has such a direction as to cause the cylinder C to rotate to the front and left. Fig. 2 shows the position after the cylinder has rotated from the zero-point to the number "5" of the pound-index.

It will be noted that in the construction shown the rod E is non-rotatable, and this is the preferred construction. The spiral rod passing through the lower ends of the casing and serving, by means of its connection with the two cylinders, to rotate the computing-cylinder is regarded as the essence of this feature of the invention, however, regardless of the precise details of connection between cylinders and rod. The spiral of the rod E may be regarded as a motion-translating member, and the antifriction-rollers *f f'*, engaging said spiral, may be regarded as an antifriction member coacting with said spiral. It is necessary that one of said motion-translating members be supported by the spring of the scale to have a simple vertical movement and that the other motion-translating member shall be connected directly to the computing-cylinder to impart rotary motion thereto. Thus one of said motion-translating members moves with the computing-cylinder about a vertical axis, while the other acts as a spring-supported runner which engages the cylinder carried or connected member and has its own vertical movement translated into a rotary movement.

250*a*

When a weight is thrown upon the pan F, the rod E is drawn sharply down, causing the cylinder C to revolve. The device comes quickly to rest, however, because of the fact that the inertia of the cylinder C acts always contrary to the movements of the rod E. Thus, the scale is almost wholly devoid of the series of short vertical movements peculiar to spring-balance scales, enabling a quick reading to be taken.

Changes in details of construction within the spirit of my invention may be made. Hence no limitation is to be understood by the precise description given above, except as may appear from the appended claims.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod suspended from said casing, and connecting means between rod and computing-cylinder, whereby by longitudinal movement of the rod rotary movement is imparted to said cylinder, substantially as and for the purpose set forth.

2. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod non-rotatably suspended from said casing, and connecting means between said rod and computing-cylinder, whereby longitudinal movement of the rod produces rotary movement of the cylinder, substantially as and for the purpose set forth.

3. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod non-rotatably suspended from said casing, said rod being provided with a spiral, and rollers journaled in said cylinder and engaging said spiral, whereby longitudinal movement of the rod turns the cylinder, substantially as and for the purpose set forth.

4. In a spring-balance scale, a suitably-supported non-rotatable casing provided with a vertical slot, a price-index on a margin of said slot, a vertical computing-cylinder journaled in said casing, ball-bearings between the bottom of said cylinder and the bottom of said casing, a load-supporting rod passing through central perforations in the bottoms of said casing and cylinder, and provided with a spiral, spring connection between said rod and the top of said casing, and rollers journaled on the inner surface of the bottom of said cylinder and contacting with said spiral, whereby longitudinal movement of the rod produces rotary movement of the spiral, substantially as and for the purpose set forth.

5. In a spring-balance scale, a suitably-supported non-rotatable casing provided with a vertical slot, a price-index on a margin of said slot, a vertical computing-cylinder journaled in said casing, a load-supporting rod extending within said cylinder, a spring load-hanger D provided with a non-rotatable top cross-piece *a* having a thread stem *a'* equipped with nuts and provided also with means for preventing rotation, said hanger D having spring connection with said rod, and connections between rod and cylinder, whereby the

rod in moving longitudinally turns the cylinder, substantially as and for the purpose set forth.

6. In a spring-balance, the combination of a non-rotating frame providing an external casing and having means for supporting it from above, weighing-springs secured at their upper ends to rigid parts of said frame, a vertically-movable runner which is suspended from the lower ends of said springs and is provided with depending means to support the load, a chart-drum rotatably mounted within said casing on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said casing having a sight-opening through which portions of said value-indicating rows may be seen, and corresonding rate-indicating figures on the outer face of said frame adjacent to the value-indicating rows on the chart-drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart-drum.

7. In a spring-balance, the combination of an external non-rotating frame adapted to be supported from above, weighing-springs secured at their upper ends to rigid parts of said frame, a vertically-movable runner which is suspended from the lower ends of said springs and is provided at its lower end with means to support the load beneath it, a chart-drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said external frame being apertured whereby portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer face of said frame adjacent to the value-indicating rows
250*b* on the chart-drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart-drum, substantially as specified.

8. In a spring-balance, the combination of an external non-rotating frame, weighing-springs supported from said frame, a vertically-movable runner which is suspended from said springs and is provided at its lower end with means to support the load beneath it, a chart-drum rotatably mounted within said frame on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said external frame being provided with a vertical aperture, whereby portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer surface of said frame adjacent to said aperture and corresponding with said value-indicating rows on the chart-drum, and mechanism for translating the vertical movements of the runner into the rotary movement of the chart-drum.

9. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing and provided with circumferential rows of cost computations, a central vertical spiral-equipped motion-translating rod, a spring supported from the casing, a motion-translating antifriction member engaging said spiral, one of said motion-translating devices being supported by said spring to move vertically and the other con-

nected with said cylinder to transmit rotary motion to said cylinder, and a load-pan supported from said spring-supported motion-translating member, substantially as and for the purpose set forth.

10. In a price-scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, and a screw connection intermediate said rod and the rotatable cylinder.

11. In a price-scale, the combination of an outer cylinder having an opening in one face thereof, a second cylinder rotatably mounted in said first cylinder, notations upon one of said cylinders to indicate the weight of an article and its total price and correlated notations on the other cylinder to indicate the price per unit of weight, a rod for suspending the article being weighed fixed against rotation, said rod being provided with a screw-thread throughout a portion of its length, and rollers carried by the rotatable cylinder and bearing directly upon said screw-threaded portion of the rod.

AUSTIN B. HAYDEN.

In presence of—
EDWARD H. AMENDT.
D. W. LEE.

251 *Final Decree.*

Filed April 27, 1905.

Supreme Court of the District of Columbia.

In Equity. No. 23430, Docket No. 52.

THE COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

This cause coming on to be heard on the pleadings and proofs and having been argued by counsel for the respective parties and considered by the court, it is, by the court, this 27th day of April, 1905, adjudged and decreed that the bill of complaint herein be, and the same is, hereby dismissed for want of equity, with costs to the defendant to be taxed.

ASHLEY M. GOULD, *Justice.*

Opinion of Justice Gould.

Filed April 13, 1905.

In the Supreme Court of the District of Columbia.

Equity. No. 23420.

COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

The bill in this case was filed to secure an injunction against the infringement of patent No. 700,919, granted to the plaintiff as assignee of the inventor, Austin B. Hayden, May 27, 1902, for improvement in computing scales, and to secure an accounting. The answer sets up the following defenses:

Lack of novelty, in that every material and substantial part of the alleged invention had been previously patented, the patents being enumerated; that prior to the alleged invention it had been constructed and used by one Christopher; that in view of the prior art the alleged invention did not involve any patentable novelty; and that the combinations set forth were unpatentable aggregations of old and well-known parts.

The proofs on behalf of plaintiff consist of Hayden's patent, a scale of defendant's manufacture, the testimony of Arthur S. Browne, expert, and certified copies of the file wrapper, and contents of Hayden's patent, and of the record of an interference between Hayden's application and those of one Culmer and one Stimpson. The
252 proofs on behalf of defendants consist of copies of the prior patents set up as references, the testimony of George P. Whittlesey, expert; the testimony of certain witnesses as to Christopher's invention; certain exhibits of parts of mechanism accompanying the testimony of the Christophers and copies of the Christopher patents Nos. 588128, 648609, and 658732.

From the testimony and arguments of counsel it is evident that the claims of the Hayden patent in controversy are Nos. 1, 2, 6, 7 and 8.

Claim 1 reads as follows:

"1. In a spring-balance computing-scale, the combination of a suitably-supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing-cylinder journaled in said casing, provided with cost computations, a spring-supported load-bearing and cylinder-revolving rod suspended from said casing, and connecting means between rod and computing-cylinder, whereby by longitudinal movement of the rod rotary movement is imparted to said cylinder, substantially as and for the purpose set forth."

Claim 2 differs from the foregoing only in that the cylinder revolving rod is described as "non-rotatably" suspended from said casing.

Claims 6, 7 and 8 are considered together by complainant's expert. Indeed, to have done otherwise would have taxed the ingenuity even of a patent expert, as they describe precisely the same mechanism in language which was used, apparently, to illustrate the possibilities of verbal hair-splitting, rather than to describe patentable claims or substantial difference.

Claim No. 6 may be taken as a sample:

"6. In a spring balance, the combination of a non-rotating frame providing an external casing and having means for supporting it from above, weighing springs secured at their upper ends to rigid parts of said frame, a vertically movable runner which is suspended from the lower ends of said springs and is provided with depending means to support the load, a chart drum rotatably mounted within said casing on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said casing having a sight-opening through which portions of said value-indicating rows may be seen, and corresponding rate-indicating figures on the outer face of said frame adjacent to the value-indicating rows on the chart-drum, and mechanism for translating the vertical movement of the runner into the rotary movements of the chart-drum."

The first question suggested by the record arises from the proceedings in the Patent Office which led up to the allowance of the claims upon which suit is brought. Hayden's original first claim was as follows:

"1. In a spring-balance computing scale, the combination of a suitably supported vertical non-rotatable casing provided with a price-index, a vertical rotatable computing cylinder journaled
253 in said casing, provided with cost computations, a spring-supported load pan supported from said casing and means connected with said pan and cylinder for rotating the cylinder as the pan is lowered under pressure, substantially as and for the purpose set forth.

(Comp'l't's Reco. p. 42.)"

The 3d, 8th and 9th claims were similar. The examiner in the Patent Office having charge of the application, on October 9th, 1899, wrote to the attorneys of Hayden as follows:

"Claim- 1, 3, 8 and 9 are rejected upon the patent to Smith 545616, September 30, 1895, price scales in view of the patent to Turnbull, 378382, Feb. 21, 1888, spring scales. It would not involve invention to arrange upon Turnbull's scales a vertical stationary casing having within it a revoluble computing chart, the axis being inverted with the index carrying shaft P shown in the Turnbull patent. Complainant's Record, p. 46."

On December 7, 1899, the attorneys of Hayden amended his application by striking out claims 1, 8 and 9, and in the place thereof inserted claims 1 and 2 of the present patent. A comparison of these claims shows that the only additional feature in (allowed) claims 1 and 2 which was not in original (rejected) claim 1 is that of the "load bearing and cylinder revolving rod suspended from said casing" and connecting means "between said rod and computing-

cylinder, whereby by longitudinal movement of the rod rotary movement is imparted to said cylinder." In other words the Patent Office held that the idea of the *vertical* arrangement of the computing chart drum and casing did not involve invention, and that in the opinion of its officials the only feature which made claim 1 patentable was the "load-bearing and cylinder-revolving rod suspended from said casing," and the connecting means "between said rod and computing cylinder, whereby by longitudinal movement of the rod rotary movement is imparted to said cylinder." In this conclusion the patentee acquiesced by abandoning his original broad claim No. 1. In this connection the language of Mr. Justice Brown, in the case of The Morgan Envelope Company *vs.* The Albany Perforated Wrapping Paper Company, 152 U. S. 425, is apposite: "But the patentee, having once presented his claim in that form, and the Patent Office having rejected it, and he having acquiesced in that rejection, he is, under the repeated decisions of the court, now estopped to claim the benefit of his rejected claim or such a construction of his present claim as would be equivalent thereto."

A careful examination of the testimony of Mr. Brown, complainant's expert, makes clear the fact that he bases his conclusion that Hayden was the first to produce a mechanism which was at once novel and an infringement upon defendant's scale, upon the vertical arrangement of the cylinders; he expressly states:

"Hayden was the first to produce an automatically rotated vertical chart drum for a spring computing scale, and this only
254 after both Beckwith and Phinney had been before the world concurrently for a generation. Hayden by the patent in suit produces a scale in which the entire dimensions are only slightly larger than the chart drum itself; substantially all of the operating mechanism is located within the chart drum itself; and a single casing serves not only to house and protect both the enclosed chart drum, but also the operating mechanism as well. The minimum compactness is thus secured, enabling a large chart drum with the maximum number of computations thereon to be employed, without unduly increasing the height of the scale; the weighing mechanism can be reduced to a simple form; all parts are adequately housed and protected with the minimum difficulty and expense; and the greatest dimension of the scale is the vertical dimension which is a matter of importance to grocers where vertical space above the counter is more available than horizontal space as a general rule. All of these advantages are incidental to the vertical drum and are realized while at the same time the drum is automatically rotated by appropriate connection with the movable balancing mechanism.

As the result a practical commercial form of scale with vertical chart drum is produced; Hayden was the first to show how this could be done consistent with automatically rotating the chart drum; and the defendants have followed in Hayden's footsteps."

It should be noted that the attention of Mr. Brown was not directed to the fact that the Patent Office had expressly declined to allow a claim based for its novelty upon the vertical arrangement of the cylinders and that Hayden had acquiesced in this declination.

Adopting, therefore, the conclusion of the Patent Office that it was the load-bearing and cylinder-revolving rod and connecting means between it and the computing cylinder, and not the vertical arrangement, which made Hayden's invention patentable, it is observed that this feature consists of the spirals on the rod, the rod projecting down and passing through the cylinder and made non-rotatable, so the spirals will engage the rollers *ff'* carried by the inside cylinder and thus rotate the cylinder. This construction forms the subject of most of the other claims of the Hayden patent, which are not in suit, and seems to me to differ materially from the specific mechanism in defendant's scale by means of which the downward movement of the load is translated into the rotary movement of the cylinder. As to whether the means used by defendant of translating the downward movement of the load to be weighed into the rotary movement of the cylinder is or is not a mechanical equivalent for the means described in Hayden's patent need not now be decided; it is sufficient to say that this mechanism is not one of the claims in suit.

Referring now to claims 6, 7 and 8. The only difference between the constructions described in these claims and the construction of the Phinney patent, dated August 30, 1870, No. 106,869, is the arrangement of the cylinders on a vertical axis instead of a horizontal axis. The same is substantially true of Patent No.
255 421,805 to Babcock, February 18, 1890, and No. 545,616 to Smith, September 3, 1885. Both these patents show spring scales having vertically movable load supporting rods attached to the spring, stationary cylinders, or the equivalent thereof, provided with price marks and a longitudinal sight opening, and rotatable chart drums operatively connected to the vertically movable load supporting rod. The sole difference between the mechanism described in claims 6, 7 and 8 in suit, and that described in these patents, is that in the former the cylinders revolve on vertical axes and in the latter on horizontal axes.

As already stated, the Patent Office, with the acquiescence of the attorneys of Hayden, eliminated the vertical arrangement of the casing and computing drum as the novel feature of his alleged invention; this being out, it seems apparent that all the elements of his patent are found in the prior art, and that their combination produced no new and valuable result, being a mere aggregation of their respective functions.

But even if the record made by Hayden in the Patent Office did not disclose the practical elimination of the vertical feature of plaintiff's scale as the foundation for the claim of patentability, it would be difficult to conclude that plaintiff's mechanism was patentable. Hayden simply took spring-scales having vertically movable load-bearing rods attached to the spring, stationary cylinders, or the equivalent thereof, provided with price marks and a longitudinal sight opening, and rota-ble chart drums operatively connected to the load-supporting rod, all elements of which are plainly disclosed in the patents cited as references, but which were constructed on horizontal axes, and "stood them up," vertically. Conceding, as con-

tended by plaintiff's expert, that thereby were secured minimum compactness, a saving of counter-space for the user, and an adequate housing of all the parts, this does not constitute a patentable invention. In the language of Mr. Justice Brown, in Wright *vs.* Yuengling, 155 U. S. 47: "It is a mere difference in degree, a carrying forward of an old idea, a result, perhaps, somewhat more perfect than had theretofore been attained, but not rising to the dignity of invention."

For the foregoing reasons, a decree will be signed dismissing the bill.

ASHLEY M. GOULD, *Justice.*

256 *Petition for Appeal, &c.*

Filed April 27, 1905.

Supreme Court of the District of Columbia.

In Equity. No. 23430, Docket No. 52.

THE COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

The Computing Scale Company of America, the above named plaintiff, conceiving itself aggrieved by the final decree made and entered on the 27th day of April, 1905, in the above entitled cause, does hereby appeal from said decree to the Court of Appeals of the District of Columbia, for the reasons specified in its assignment of errors filed herewith, and it prays that its appeal may be allowed, and that a proper citation may be issued, directed to The Automatic Scale Company, the above named defendant, and commanding it to appear before the said Court of Appeals of the District of Columbia to do and receive what may pertain to justice to be done in the premises, and that a transcript of the record, proceedings and evidence in said cause, duly authenticated, may be transmitted to the said Court of Appeals of the District of Columbia.

CHURCH & CHURCH,
Solicitors for Complainant.

The foregoing appeal is hereby allowed and the bond on appeal fixed at $250.

ASHLEY M. GOULD, *Justice.*

Citation of notice of appeal herein is hereby waived.

E. HILTON JACKSON,
Of Counsel for Defendant.

Ap'l 27, 1905.

Assignment of Errors.

Filed April 27, 1905.

Supreme Court of the District of Columbia.

In Equity. No. 23430, Docket No. 52.

THE COMPUTING SCALE COMPANY OF AMERICA, Plaintiff,
vs.
THE AUTOMATIC SCALE COMPANY, Defendant.

257 And now comes The Computing Scale Company of America, the above named plaintiff and says that in the record and proceedings in this case there is manifest error in this, to wit:

1. That the court erred in dismissing plaintiff's bill of complaint for want of equity.

2. That the court erred in not holding letters patent No. 700,919 set forth in the bill of complaint to be valid and infringed by the defendant herein.

Wherefore the said plaintiff prays that the decree aforesaid may be revised and reversed.

CHURCH & CHURCH,
Solicitors for Plaintiff.

Washington, D. C., April 27, 1905.

Memorandum.

May 5, 1905.—Appeal bond filed.

Order for Preparation of Record.

Filed May 5, 1905.

Supreme Court of the District of Columbia.

Law Offices of Church & Church, McGill Building, 908 G Street N. W.

WASHINGTON, D. C., *May* 5, 1905.

In Equity. No. 23420, Docket No. 52.

THE COMPUTING SCALE CO. OF AMERICA
vs.
THE AUTOMATIC SCALE COMPANY.

John R. Young, Esq., clerk supreme court, D. C., Washington, D. C.

DEAR SIR: Will you please prepare a transcript of the record in the above entitled cause for use on the appeal to the Court of Ap-

peals of the District of Columbia recently taken in said cause, said transcript to include the following:

1. The bill, answer and replication.
2. The depositions offered and read in behalf of the plaintiff & exhibits accompanying same.
3. The depositions offered and read in behalf of the defendant & exhibits accompanying same.
4. The decree of the court dismissing the bill & opinion of Judge Gould.
5. The petition for appeal and assignment of errors.

Yours truly, CHURCH & CHURCH.

E. G.

258 Supreme Court of the District of Columbia.

UNITED STATES OF AMERICA, *District of Columbia, ss:*

I, John R. Young, clerk of the supreme court of the District of Columbia, hereby certify the foregoing pages, numbered from 1 to 261, inclusive, to be a true and correct transcript of the record, as per directions of counsel herein filed, copy of which is made part of this transcript in cause No. 23,420 in equity, wherein The Computing Scale Company of America is plaintiff, and The Automatic Scale Company is defendant, as the same remains upon the files and of record in said court.

Seal Supreme Court of the District of Columbia.

In testimony whereof, I hereunto subscribe my name and affix the seal of said court, at the city of Washington, in said District, this 19th day of June, A. D. 1905.

JOHN R. YOUNG, *Clerk.*

Endorsed on cover: District of Columbia supreme court. No. 1572. The Computing Scale Company of America, appellant, *vs.* The Automatic Scale Company. Court of Appeals, District of Columbia. Filed Jun- 19, 1905. Henry W. Hodges, clerk.

259 TUESDAY, *October 17th, A. D.* 1905.

No. 1572.

COMPUTING SCALE COMPANY OF AMERICA, Appellant,
vs.
THE AUTOMATIC SCALE COMPANY.

The argument in the above entitled cause was commenced by Mr. Melville Church, attorney for the appellant, and was continued by Mr. H. P. Doolittle, attorney for the appellee.

WEDNESDAY, *October* 18*th*, *A. D.* 1905.

No. 1572.

COMPUTING SCALE COMPANY OF AMERICA, Appellant,
vs.
THE AUTOMATIC SCALE COMPANY.

The argument in the above entitled cause was continued by Mr. H. P. Doolittle, attorney for the appellee, and was concluded by Mr. Melville Church, attorney for the appellant.

260 No. 1572.

COMPUTING SCALE COMPANY OF AMERICA, Appellant,
vs.
THE AUTOMATIC SCALE COMPANY.

Opinion.

(Mr. Justice DUELL delivered the opinion of the Court:)

This suit was brought for the alleged infringement of letters patent No. 700,919, issued May 27, 1902, to the appellant, as assignee of Austin B. Hayden, for alleged improvements in computing scales. The invention relates particularly to computing scales of the spring balance type, and its main object, as stated, is to increase the computing capacity of scales of this type. It may be said that a computing scale is a device which enables the price of the article weighed thereon to be at once read upon the scales, thus avoiding the necessity of mathematical calculation upon the part of the operator.

The art in question was quite fully developed at the time when Hayden filed the application upon which the patent in suit issued. The record discloses one patent issued some fifty years ago, and, it may be, as urged, that its device was not a commercial success, although the record is silent as to this. Like many other inventions, it very likely was born out of due season, and long before the demands of trade led to a commercial demand for computing scales. Nevertheless, the patent and others set forth in the record cannot be overlooked in considering the state of the art. Other patents were issued at later dates, disclosing various improvements, and Hayden's invention is, therefore, but one of many improvements contributed by one of many inventors. While his application was pending it appears from an examination of the record that other inventors were at work in this art, and improvements similar to those set forth in the Hayden patent were disclosed in other applications for patents. In the absence of testimony the fair inference to be drawn from this fact is that the desirability for such improvements having become known, a solution of the problems occurred to many minds, and when that solution is shown to be the same, that no greater exercise of inventive talent was called into play.

Hayden, as the record discloses, is not a pioneer in the art, but as an improver he is entitled to such recognition as his contribution to the art warrants, and his assignee to protection to the same extent, subject, however, to such limitation, if any, as either of them permitted to be imposed upon the grant as disclosed by the file wrapper and contents of the application upon which the patent issued. No such limitations, nor any abandonment of any part of the invention, is to be presumed, but must be shown by clear and convincing proof. While the courts are vigilant to protect the public, which is interested in having even a lawfully patented invention kept within legal bounds, they should be equally zealous to find the contribution which the inventor has made to the art to which his invention relates and to protect him to the full extent of that contribution; but in so doing they must give due weight to any estoppel which he has created by reason of anything done by him, or suffered to be done, either prior or subsequent to the issue of his patent, which prevents him from claiming his invention in its entirety.

To the patent we turn for a description of the invention; to the file wrapper and contents of the application, and to the prior art, for the limitations to be imposed upon the claimed invention.

Mr. Brown, appellant's expert, has fairly and clearly set forth the general construction and operation of the device of Hayden's patent. He says:

"The two principal parts of the mechanism are as follows: 1st, a vertically arranged, non-rotating frame, which comprises and includes a vertical cylindrical casing, which encloses, conceals, and protects the major portions of the operating portions of the scale, and upon which are marked the price indications, which indicate the price per pound at which the articles weighed are to be sold. As clearly shown in the drawings, this external casing or frame is provided with a vertically disposed sight opening, through which the coacting mechanism is observable, and along one vertical edge of this sight opening are arranged the numerals indicating the price per pound, these numerals in the illustrated instance running consecutively from 2 to 30.

"The second of these principal parts is a second cylinder, located within the casing, this cylinder constituting a computing cylinder or chart drum, upon which are placed indications indicating the weight in pounds of the article weighed, and also having other indications indicating the price of an article weighed, corresponding to the weight and to the price per pound. This chart drum or computing cylinder extends vertically within the external casing, and it is arranged to rotate on a vertical axis within the external casing. This casing is appropriately connected to the spring balancing mechanism and to the scale pan, so that when the spring balancing mechanism moves up and down on the placing or removing of a load on the scale pan, the chart drum will be rotated in one direction or the other within the external casing or frame.

* * * * * * *

"As shown in figure 2 of the drawings, the weight and value-indicating figures are placed in horizontal rows on the external surface or periphery of the rotatable chart drum of the computing cylinder, the weight indications being shown in a horizontal row at the bottom and the price indications in horizontal rows above, there being as many of these horizontal rows of price-indicating figures as there are 'prices per pound' indicating figures on the fixed external
261 casing. These value-indicating figures on the chart drum are computed at different rates, corresponding to the 'price per pound' figures on the external casing. As indicated in figure 2 of the drawing of the patent, there is supposed to be a weight on the scale pan of five pounds, this weight being indicated on the weight scale, and it will be seen that in such instance the various value indications on the chart drum opposite the 'price per pound' indications on the fixed casing are in each illustrated instance five times as great as the corresponding 'price per pound' indications. The drawings illustrate only a portion of the indicating figures on the chart drum, but it will be understood in practice that this drum will be entirely covered on its external surface with figures corresponding to the weights multiplied by the figures indicating 'price per pound' on the non-rotatable external casing. Accordingly, whenever the interior chart drum is turned a distance corresponding to the load placed on the scale pan, the value of the load can be read at once opposite the figures on the external casing, which correspond to the price per pound of the article weighed.

"The various price indications on the chart drum are visible through the sight opening in the external casing.

"The mechanism whereby the chart drum is rotated a distance corresponding to the weight of the load plan is as follows: The balancing mechanism is a spring balance comprising two springs, clearly shown in figure 3 of the drawing, which are suspended from a suitable portion of the non-rotating frame of the scale. To the lower ends of these springs is attached a cross-bar, in the middle of which depends a rod indicated by the letter E, this cross-bar and rod constituting the runner of the scale. The scale pan is suspended from the lower end of this rod as illustrated in figure 1. When a load is placed on the scale pan the vertical runner moves vertically downward, distending the spring to an extent proportional to the weight of the load. In order to indicate the weight this vertical movement of the spring-supported runner is converted or translated into a rotary movement of the chart drum by suitable intervening mechanism. In the specific embodiment of the invention, as illustrated in the drawings, this intervening mechanism consists of a spiral groove of high pitch on the vertical rod E and two rollers journaled in suitable bearings carried by the rotatable chart drum, the bearing of one of these rollers being spring pressed, so that the rollers are held in yielding contact with the spiral groove on the rod. Consequently, as the rod moves vertically, the spiral groove thereof causes the chart drum or computing cylinder to rotate on its vertical axis.

"Accordingly, the mechanism is such that the vertical move-

ment of the runner is translated into rotary movement of the chart drum, and the chart drum is rotated to an extent proportional to the vertical movement of the runner."

The specification of the patent ends with eleven claims, of which one, two, six, seven, and eight are alleged to be infringed. It will, however, be necessary to only consider claims one and six. Claim two differs from claim one, barring certain immaterial variations in phraseology, in that it limits the spring-supported, load-bearing, and cylinder-revolving rod to one that is "non-rota-bly" suspended from the casing. Claims seven and eight admittedly do not differ patentably from claim six, these three claims stating in varying phraseology the same invention—one of the many examples of word painting too often found in letters patent.

Claims one and six are as follows:

"1. In a spring-balance computing scale, the combination of a suitably supported vertical non-rotatable casing provided with a price index, a vertical rotatable computing cylinder journaled in said casing, provided with cost computations, a spring supported load bearing and cylinder revolving rod suspended from said casing, and connecting means between rod and computing cylinder, whereby, by longitudinal movement of the rod, rotary movement is imparted to said cylinder, substantially as and for the purpose set forth.

"6. In a spring balance, the combination of a non-rotating frame providing an external casing, and having means for supporting it from above weighing springs secured at their upper ends to rigid parts of said frame, a vertically movable runner which is suspended from the lower ends of said springs and is provided with depending means to support the load, a chart drum rotatably mounted within said casing on a vertical axis and having external horizontal rows of value-indicating figures computed at different rates, said casing having a sight opening through which portions of said value-indicating rows may be seen, the corresponding rate-indicating figures on the outer face of said frame adjacent to the value-indicating rows on the chart drum, and mechanism for translating the vertical movements of the runner into the rotary movements of the chart drum."

The defences are the ordinary ones of anticipation, non-patentability, non-infringement, and prior invention by one Christopher. While it will not be necessary to consider any but those of non-infringement and absence of patentable invention, we have, however, examined the evidence relating to the alleged priority of invention by Christopher, and from such examination we do not find sufficient to warrant a finding that Christopher is shown to be a prior inventor of the subject-matter set forth in the claims in suit. For a correct determination of the questions of patentability and infringement the claims must be considered in the light of the prior art and of the proceedings in the Patent Office. If the claims are valid and can be taken at their face value they are clearly infringed.

The limitations arising out of the prior art, if any, will be found in the following patents: Phinney, No. 106,869, August 30, 1870; Beckwith, No. 12,249, January 16, 1855; Babcock, No. 421,805,

February 18, 1890; Freeman, No. 431,456, July 1, 1890; and Smith, No. 545,616, September 3, 1895.

Phinney discloses a spring-balance computing scale comprising a suitably supported non-rotatable case having a price index, a rotatable computing cylinder journaled in said case provided with cost computations, a spring supported load bearing and cylinder re-
262 volving rod suspended from the case, and connecting means between the rod and computing cylinder, whereby by a longitudinal movement of the rod rotary motion is imparted to the cylinder.

Comparing this device with the patented structure which is the subject of claims one and two, it is apparent that the main difference between the two, broadly considered, is that Hayden's cylinders are arranged vertically, while Phinney's are arranged horizontally. It is shown, however, that such arrangement of a cylinder of a cost computing scale was old long before any date that can be assigned to Hayden. Beckwith's patent No. 12,249, of January 16, 1855, discloses this. Invention cannot be predicated upon differently positioning the cylinders, and this we understand is not seriously controverted. Freeman, No. 431,456, is another example of a rotable cylinder carrying the computations and mounted to move vertically.

The prior patents to Babcock, No. 421,805, and Smith, No. 545,616, disclose spring-balance computing scales, having suitably-supported horizontal stationary cylinders (or, as in the Babcock patent, an equivalent therefor), provided with price marks and rot-able chart drums operatively connected to the vertically movable load-supporting rod. In the light of these patents, and especially the Smith patent, we can discover little room for broad claims for a combination of elements, such as set forth in the claims in controversy. While Smith's construction differs from that of the patent in suit in the relative arrangement of the casing and cylinder, in other respects they differ patentably only in details of construction. There being no invention, in view of the prior art, in substituting for the horizontal case and cylinder of the Smith patent the old vertical arrangement of those parts, the first and second claims of the patent in suit must, if they are to be held valid, be limited to the specific forms of the parts set forth in the claims. The line of demarcation between Hayden's patented structure and those of the prior art is, at the best, but slight. His device may be commercially better than the prior devices, but there is no evidence before us to show that this has been recognized by the commercial world, or that the patented device was supplanted the prior devices, or that it has gained any recognized position. The record is silent as to all these points.

It being the duty of the court, as stated, to find what contribution Hayden has made to the art, we turn to the specification to find what Hayden had actually contributed. We find that, broadly considered, the elements of the claims referred to are old, and that they have been arranged in substantially the same manner and thereby have produced substantially the same result. We, however, find some specific forms of parts of the device that apparently are new, and

therein lie the novelty of the device. The main novelty seems to reside in the construction of the spring-supporting, load-bearing, and cylinder-revolving rod, and the means by which the longitudinal movement of that rod produces the rotary movement of the cylinder. The specification states that the load-supporting and cylinder-actuating rod is provided with a spiral groove which moves between rollers centrally located on the inner surface of the bottom of the cylinder. It further states that, "It will be noted that in the construction shown, the rod E is non-rotatable, and this is the preferred construction. The spiral rod passing through the lower ends of the casing and serving, by means of its connection with the two cylinders, to rotate the computing-cylinder, is regarded as the essence of this feature, of the invention, however, regardless of the precise details of connection between cylinders and rod. The spiral of the rod E may be regarded as a motion-translating member, and the anti-friction rollers *ff'*, engaging said spiral, may be regarded as an anti-friction member coacting with said spiral. It is necessary that one of said motion-translating members be supported by the spring of the scale to have a simple vertical movement, and that the other motion-translating member shall be connected directly to the computing cylinder to impart rotary motion thereto. Thus one of said motion-translating members moves with the computing cylinder about a vertical axis, while the other acts as a spring-supported runner which engages the cylinder carried or connected member and has its own vertical movement translated into a rotary movement."

We have not overlooked the statement that in the preferred construction the rod is non-rotatable, and that claim one is not limited in terms to a non-rotatable rod. Nor have we overlooked the fact that neither in claims one or two is there a limitation in terms to the specific construction of the rod, and to the specific means by which, in connection with the rod, movement is imparted to the cylinder. It is evident that Hayden thought that his invention was broader than in our opinion it proves to be, and so claimed it. Nevertheless, we can see no escape from the conclusion that claims one and two are devoid of patentable inventions unless limited to combinations, one element of which is a rod provided with a spiral adapted to engage with rollers coacting therewith. It may be that when so construed and limited claim two will not patentably differ from claim three, but it is unnecessary to pass upon that question at this time. If we are correct in limiting claims one and two to the specific form of the rod and the coacting means by which motion is imparted to the cylinder, then, admittedly, the defendant does not infringe, for its structure does not have the rod provided with a spiral, and consequently the means for producing rotary movement of the cylinder are different. It is admitted by appellant's counsel that the appellee is not shown to have used the specific form of translating device shown and described in the patent.

What we have said in reference to claims one and two applies equally to claims six, seven, and eight, for each of these have as an element mechanism for translating the vertical movement of the runner into the rotary movements of the chart-drum. This mech-

anism is the rod provided with spiral and the rollers journaled on the inner surface of the bottom of the cylinder. The defendant does not employ such mechanism, and its mechanism can not be held to be an equivalent. Claim six, however, in our opinion, can not be held valid in view of the proceedings in the Patent Office, as
263 shown by the file wrapper and contents of the application upon which the patent issued. It appears that a claim was presented identically the same as this claim, save that it omitted the word "depending" before the phrase "means to support the load," or, in other words, was not limited to a structure where the means for supporting the load to be weighed was below the scales. The office held that the claim as presented was not patentably distinguishable from a prior patent, saying:

"Upon consideration of claim six, preparatory to the declaration of interference, it is found that the claim does not clearly and patentably distinguish from the scale shown in the patent to Herr, No. 651,801, June 12, 1900, price scales, and it is therefore necessary to reject the claim. It is believed, however, that the claim may be rendered allowable by inserting *depending* before 'means' in line 6."

This Herr patent is not in evidence, but that is immaterial, for, whether the examiner was right or wrong, the patentee having acquiesced in the ruling, neither he nor his assignee, can be heard to question the correctness of the ruling. The courts have gone so far as to hold that even where the ground of an objection, made by the Patent Office and acquiesced in by the applicant, was later held by the Supreme Court not to be a valid one; that, nevertheless, the applicant thereafter is bound by it. Blades *v.* Rand, McNally & Co., 27 Fed. 93. Of course, it is not contended by appellant that the claim can be read as though the word "depending" had not been inserted, but as we understand it, the rule goes further than merely holding that the limition can not be read out of the claim. It goes to the extent of holding that "the claim as allowed must be read and interpreted with reference to the rejected claim." Hubbell *v.* United States, 179 U. S. 77. A claim differing from claim six only in omitting the word "depending" having been rejected, the allowed claim must depend for vitality upon the fact that it involved invention in a computing scales to employ depending means for supporting the load to be weighed. Some means, of course, had to be employed for supporting the load, and the substitution of one old arrangement for another would scarcely involve or show invention. Depending means for supporting the load were old and most common in computing scales. Examples are to be found in the patents to Babcock, Beckwith, Smith, and others heretofore cited. The depending means for supporting the load to be weighed being old and their substitution in an old combination is insufficient to warrant a finding of patentable invention. The patentee having admitted that the claim as presented was met by the reference, and having, to avoid the reference, inserted a non-patentable limitation, his assignee, being bound by such action, can not escape the penalty.

Claims seven and eight, being but restatements in somewhat different phraseology of the same alleged invention as recited in claim

six, are also devoid of patentable invention. Our conclusion is that the claims in suit are not infringed when limited, as they must be, by the prior art, and that claims six, seven, and eight are void for lack of patentable invention, as disclosed by the proceedings in the Patent Office and by the prior art.

It follows that the decree of the Supreme Court of the District of Columbia was correct, and it will therefore be affirmed with costs. It is so ordered.

Affirmed.

264 WEDNESDAY, *November 22nd, A. D.* 1905.

No. 1572. October Term, 1905.

COMPUTING SCALE COMPANY OF AMERICA, Appellant,
vs.
THE AUTOMATIC SCALE COMPANY.

Appeal from the Supreme Court of the District of Columbia.

This cause came on to be heard on the transcript of the record from the Supreme Court of the District of Columbia and was argued by counsel. On consideration whereof, It is now here ordered, adjudged and decreed by this Court that the decree of the said Supreme Court, in this cause, be, and the same is hereby, affirmed with costs.

Per MR. JUSTICE DUELL.

November 22, 1905.

TUESDAY, *December 5th, A. D.* 1905.

No. 1572. October Term, 1905.

COMPUTING SCALE COMPANY OF AMERICA, Appellant,
vs.
THE AUTOMATIC SCALE COMPANY.

On motion of Mr. Melville Church, attorney for the appellant in the above entitled cause, It is ordered by the Court that said appellant be allowed an appeal to the Supreme Court of the United States, and the bond for costs is fixed at the sum of three hundred dollars.

265 (*Bond on Appeal.*)

Know all men by these presents, That we, the Computing Scale Company of America, a corporation created and existing under the laws of the State of New Jersey, as principal, and the American Surety Company of New York, a corporation organized and existing under the laws of the State of New York, as surety, are held and firmly bound unto the Automatic Scale Company in the full and just sum of three hundred ($300.00) dollars, to be paid to the said Automatic Scale Company, or their certain attorney, executors,

administrators, or assigns; to which payment, well and truly to be made, we bind ourselves, our heirs, executors, and administrators, jointly and severally, by these presents.

Sealed with our seals and dated this 12th day of December, in the year of our Lord one thousand nine hundred and five.

Whereas, lately at a Court of Appeals of the District of Columbia in a suit depending in said Court, between the Computing Scale Company of America and the Automatic Scale Company a decree was rendered against the said Computing Scale Company of America and the said Computing Scale Company of America having prayed and obtained an appeal to the Supreme Court of the United States to reverse the decree in the aforesaid suit, and a citation directed to the said Automatic Scale Company citing and admonishing it to be and appear at a Supreme Court of the United States, at Washington, within thirty days from the date thereof;

Now, the condition of the above obligation is such, That if the said Computing Scale Company of America shall prosecute said appeal to effect, and answer all damages and costs if it fail to make its plea good, then the above obligation to be void; else to remain in full force and virtue.

[Seal of American Surety Company of New York.]

COMPUTING SCALE COMPANY OF AMERICA, [SEAL.]
By EDWARD CAULEY, *Pres.* [SEAL.]
AMERICAN SURETY COMPANY OF NEW YORK, [SEAL.]
By LEONARD DAMMAN, [SEAL.]
Resident Vice-President.

Attest: L. BERT NYE, [SEAL.]
Resident Assistant Secretary.

Sealed and delivered in the presence of—
CLAUDE B. BROWN.
DELMAS STUTLER.

Approved by—
SETH SHEPARD,
Chief Justice Court of Appeals of the District of Columbia.

Approved by—
H. P. DOOLITTLE,
Sol'r for Defendant-Appellee.

[Endorsed:] No. 1572. Computing Scale Co. of America, Appellant, *vs.* The Automatic Scale Co. Bond on Appeal to Supreme Court U. S. Court of Appeals, District of Columbia. Filed Dec. 22, 1905. Henry W. Hodges, Clerk.

266 UNITED STATES OF AMERICA, *ss:*

To The Automatic Scale Company, Greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, at Washington, within 30 days from the date hereof, pursuant to an order allowing an appeal, filed in the Clerk's Office of the Court of Appeals of the District of Columbia, wherein Computing Scale Company of America is appellant and you are appellee, to show cause, if any there be, why the decree rendered against the appellant, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

Witness, the Honorable Seth Shepard, Chief Justice of the Court of Appeals of the District of Columbia, this 22nd day of December, in the year of our Lord one thousand nine hundred and five.

SETH SHEPARD,
Chief Justice of the Court of Appeals of the District of Columbia.

Service of the above accepted this 22" day of December A. D. 1905.

E. HILTON JACKSON,
Of Counsel for The Automatic Scale Co.

[Endorsed:] Court of Appeals, District of Columbia. Filed Dec. 22, 1905. Henry W. Hodges, Clerk.

267 Court of Appeals of the District of Columbia.

I, Henry W. Hodges, Clerk of the Court of Appeals of the District of Columbia, do hereby certify that the foregoing printed and typewritten pages numbered from 1 to 266, inclusive, contain a true copy of the transcript of record, and proceedings of said Court of Appeals, in the case of Computing Scale Company of America, Appellant, *vs.* The Automatic Scale Company, No 1572, October Term, 1905, as the same remain upon the files and records of said Court of Appeals.

In testimony whereof I hereunto subscribe my name and affix the seal of said Court of Appeals, at the City of Washington, this 28th day of December A. D. 1905.

[Seal Court of Appeals, District of Columbia.]

HENRY W. HODGES,
Clerk of the Court of Appeals of the District of Columbia.

Endorsed on cover: File No. 20,027. District of Columbia, Court of Appeals. Term No. 175. Computing Scale Company of America, appellant, *vs.* The Automatic Scale Company. Filed December 29th, 1905. File No. 20,027.